



FRIDAY, APRIL 7, 1899.

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Contributions.

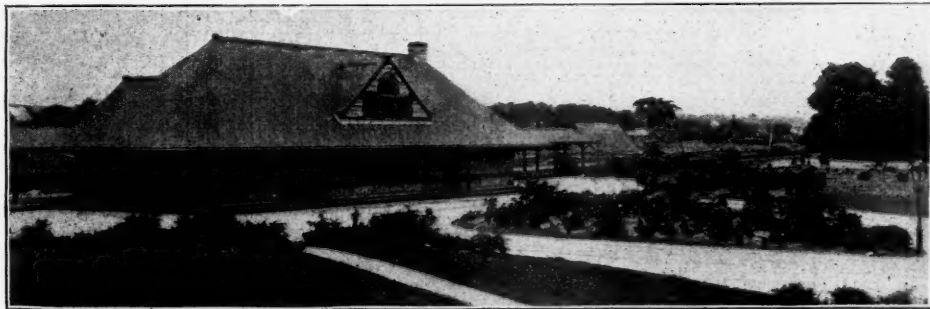
The New Railroad Into London.

Chelsea, London, March 24, 1899.

To the Editor of the Railroad Gazette:

The opening of a new trunk line of railway into London is an event of rare occurrence and extraordinary importance. Probably it will be many years before it again happens. On Thursday, March 9, the Great Central Railway was formally opened and its regular train service is now working. Notwithstanding the fact that all but two of the great lines of England (the Lancashire & Yorkshire and the North-Eastern) already reach London, it has been thought that after all there is room for yet one more, London having increased prodigiously since the last provincial railway forced its way to town. That was the Midland, in 1868, though it had had running powers to London, first over the London & North Western to Euston and afterward over the Great Northern to King's Cross, for upward of 20 years. The Midland was really compelled to come south, as first one then the other line became too busy to accommodate it any longer. In the present instance, however, the principal reason for the extension has been the fact that the Great Central was chiefly a gathering ground for much of the London traffic of other lines, mainly the Great Northern. Consequently it got but a short haul, especially in the case of coal traffic, most of its large pits being within 20 miles or so of the G. N. Ry.

The new line serves no place of importance which has not hitherto been on a main line, but it provides a second route from London to Leicester, a third from London to Nottingham and Sheffield, and a fourth to Manchester. Being joint owner with two



Passenger Station of the Boston & Albany Railroad at Wellesley, Mass.

others of a route from the latter place to Liverpool, it may even compete for the Liverpool traffic, although the London & North-Western will always be considerably the shortest route.

The financial effort has been very great for a small and poor company, compelled to raise money on rather dear terms. With the Midland the case was different. They were prosperous and in good credit, and had hardly 50 miles to come, from Bedford to St. Pancras, London, while the Great Central has had to construct about 97 miles of new line.

There will be little waiting for traffic to develop itself. It lies ready to the company's hand. Although coal traffic commenced only on July 25 last, and enormous space and facilities have been provided for

it at this end, it is already becoming clear they will be insufficient before long. Yet only London coal can be taken, as the line has no connections by which it could take traffic for places south of the Thames. This it will seek to remedy by constructing a short line west of Aylesbury to join the High Wycombe line of the Great Western.

Rather a weak point in the new line at present is the absence of any means of reaching the City. At Marylebone terminus it is, however, only a quarter of a mile from the Baker Street Station of the Metropolitan, whose trains run to the great center of business every two or three minutes. At first it was proposed to have a side line down to the Metropolitan, the same as the Midland and the Great Northern have, as the Metropolitan runs right in front of the Great Central Hotel and station, but the difficulty of working a junction in the tunnel and making the

It contains about 800 rooms, and is an extremely handsome building of red brick, with terra cotta dressings. A tall clock tower in front is a very distinctive feature. Goods traffic begins on April 11, when a large part of the warehouse, a structure with 11 acres of floor space, will be ready for use. The opening of the new line has been much delayed by the non-delivery of steel work, owing to the engineers' strike, but it now takes place at an auspicious period of good trade and with the summer passenger traffic soon coming on.

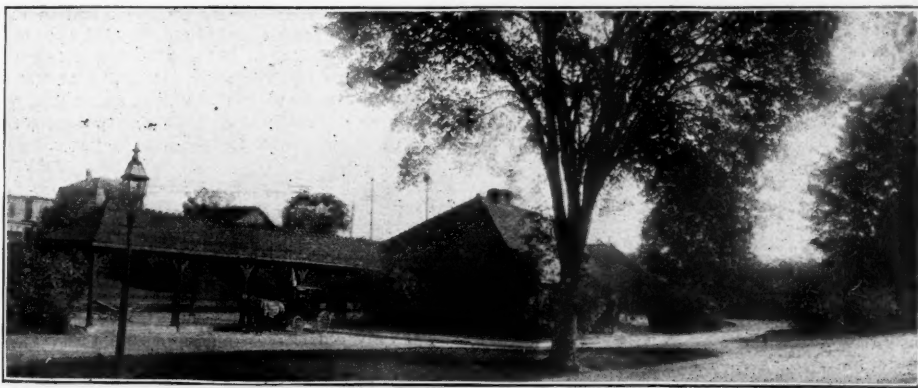
W. B. PALEY.

Landscape Gardening on the Boston & Albany.

Auburndale, Mass., Feb. 24, 1899.

To the Editor of the Railroad Gazette:

A recent article in the New York Evening Post calls attention to the æsthetic need of more beauti-



Passenger Station of the Boston & Albany Railroad at Auburndale, Mass.

down trains cross the path of the up-was too serious, and the plan has not been carried out.

Another peculiarity of the Great Central's London line is that it has no local stations whatever within some 45 miles of town. This in consequence of its access being confined to running powers over the Metropolitan from Quainton Road to about two miles out. Consequently it can do nothing to develop any suburban traffic for itself. Efforts will probably be made to remedy this sooner or later, but it would be of little use without direct access to the City. Tolerably well authenticated rumors are indeed in the air relative to a joint purchase of the District Railway by the Great Western, Great Central and South-Eastern lines jointly. The latter would also imply the London, Chatham & Dover, as it and the South-Eastern are now practically one concern. The arrangement would give the Great Central and Great Western access to the District Railway at Ealing, whence they could run through trains, or portions of through trains, to the Mansion House. It would not be possible, however, to deal with any considerable amount of main-line traffic there, the space being too confined altogether.

A somewhat heavy price has had to be paid for buying off the powerful opposition of the Great Northern and for abrogating the agreement under which the two companies exchanged traffic to and from London at Retford. It is that the Great Northern shall have running powers over the new line northward from Nottingham to Manchester. They therefore run from Sheffield, or rather Woodhouse Junction, to Manchester, the way they always have run, except that they turn off at Godley Junction

ful grounds about railroad stations. The writer proves, psychologically, that the inhabitants of the state of New York are suffering from a lack of the artistic spirit in railroad corporations. He also speaks of a new society for the "Preservation of Scenic and Historic Places and Objects," which has undertaken to convert railroad officers from the error of their ways by adopting a series of resolutions requesting them "in the interest of the public health, comfort and pleasure, the local reputation of their respective communities and the general civic pride of the state, to develop more extensively the grounds about their stations."

One grand exception to the general demoralization is mentioned—the New York Central & Hudson River Railroad Company—but even this enlightened corporation is not quite up to the "high art" views of the Post's correspondent.

Perhaps a little account of what has been done here in the "Old Bay State" may be of interest to your readers and help on in some degree that artistic age for which the above-mentioned society is striving.

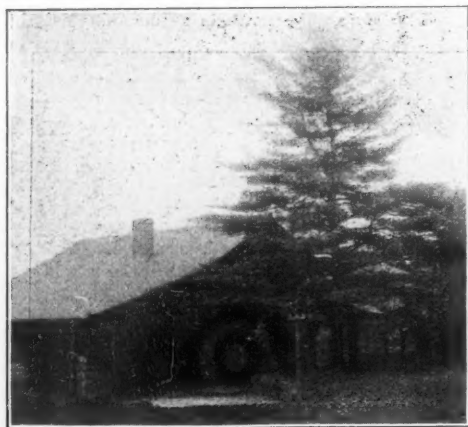
The Boston & Albany Railroad, which connects the capitals of our respective states, is particularly fortunate in that its way leads through the beautiful natural scenery of Berkshire County; but, in addition to this, our enterprising company has employed a landscape gardener or "architect" for more than 14 years. As early as 1882 Mr. F. L. Olmstead, whose name is widely known, designed and arranged the grounds around the stations at Chestnut Hill, Auburndale and Palmer. Since 1884 the work has been in charge of Mr. E. A. Richardson, and there are now more than 60 stations which have received artistic treatment. I mean artistic in the highest sense, for wherever natural beauties were found they were taken advantage of, and what artificial features have been added are so true to nature that it would take a very discerning person to know which is natural and which is artificial. The plan has been to grade the grounds when necessary, so as to make the most of that particular situation, sometimes making artificial lakes or rockwork, then planting trees and shrubs in such kinds and numbers and in such situations as shall provide a pleasing variety and regular succession of foliage, flower and fruit throughout the season. Even when the leaves have fallen there is some beauty left, as on many of the plants and shrubs the fruit remains through the winter.

No two spots are alike. Some have only lawns, but most have trees and plants. In some places where nothing would grow a tiny lake has appeared, or a brook has been turned into a new channel and made to come near enough to be seen and heard. Few could believe the transformations that have been made. In some cases the grounds about the station are the only place in town where even a pretense of landscape gardening has been made.

Nowhere on this road will the traveler's æsthetic sense be disturbed by red geranium anchors or pansies set out in beds of rhomboidal shapes. Indeed, in the desire to do away with all appearance of artificiality, all bedding plants have been discarded. You will, however, find everything beautiful in its season. In the early spring we see clumps of golden forsythias, fiery bushes of the Pyrus japonica, many

varieties of spirea, the showy dogwoods, snowballs and the viburnums, whose coral-red berries and brilliant leaves are so attractive in the later year. Then the wild roses, such a wealth of them one would almost think the wild rose had an especial affinity for railroads.

The favorite vines, *Ampelopsis quinquefolia* and the *A. vetchii*, cover rocks and stone walls, while climbing or trailing roses run riot over otherwise unsightly spots. The *Kalmias* and *rhododendrons* are here, too, plants which are beautiful enough to adorn "Barewood Gardens," the elegant home of the editor of the *London Times*. I have been told that when the English papers announce the flowering season these grounds are thrown open to the public, and people for miles around come to



Chestnut Hill.

see these beautiful strangers from across the water. At this season of the year the brilliant fruits of the native and Japanese barberries, the shining black berries of the privets, the scarlet seed-vessels of the *Rosa rugosa*, and many others make us almost forget that "the melancholy days are come."

Our economical landscape architect saves the expense of nurseries, which the Post's correspondent thinks so necessary. He plants thickly, and as the trees and shrubs grow and need thinning out he transplants them to other places. As he often has more of some varieties than he needs he exchanges with other nurseries and also with the Arnold Arboretum at Boston. Some money is expended each year for new varieties, but for the most part his nurseries are the woods and fields, which furnish more beautiful things than many of us are aware of. As the effect to be obtained is natural rather than decorative, trees and shrubs are not trimmed, but allowed to grow in free and full luxuriance.

With the magnificent scenery in the western part of the state and the excellent work done by Mr. Richardson in the eastern part, the journey from Albany to Boston, compared with other railroads, is through one continuous parkway. The few accompanying photographs, taken at random from a large collection, may serve to show more vividly than words can do what has been accomplished in the beautification of its station grounds by this one railroad company.

ELLEN F. BLODGETT.

Single Track Dispatching on a Double Track Road

Chicago, March 31, 1899.

To the Editor of the Railroad Gazette:

I have just read your editorial in the issue of 24th inst. on the West Dunellen wreck.

It occurs to me that not only was the dispatcher at fault for not giving the ruling train a copy of the order to the non-ruling train, but he was very negligent in violating code rule No. 521.* On the double track lines of this company [one of the prominent roads west of Chicago] it is the practice to hold the ruling train at two stations and to invariably give the ruling train orders to meet the non-ruling train at the commencement of the single track at the second station back, the operator at the meeting point having a copy of the order as his authority to hold the trains to meet. This is done for two principal reasons: first, that it is bad practice to give a train an order to meet a train at the meeting point, and, second, that in case of turning double track into single track the connection at the end of the single track may be beyond the station in the direction in which the non-ruling train is going, and the non-ruling train may go to the connection without proper protection. I was forcibly reminded of this during a recent trip on an Eastern line operated under the standard code. A freight train had stalled and a fast passenger train was ordered to run on the wrong track. A holding order was put out at the station where the non-ruling train was to cross back to its proper track. The connection, which it was necessary for the non-ruling train to use in

order to get back to its proper track, was some distance beyond the station and signal, and there was a long curve beyond the connection. The conductor signalled his train ahead, but the engineer very properly refused to go until a flagman had been sent ahead. Before the flagman could even get to the first switch of the connection the ruling train showed up, running at a very high rate of speed. If the engineer of the non-ruling train had been less intelligent and had pulled out as directed by his conductor a collision could not have been averted and it would probably have been a side collision.

In case of the blocking of one track and the use of a piece of single track, the first act of the train dispatcher should be to put out a holding order at the proposed end of the single track to hold ruling trains, and also at the first station back. He should then put out a telegraph notice at convenient stations, where all trains stop, to the effect that single track is in use between certain stations; and in ordering a non-ruling train forward a copy of the order should go to the operator at the end of the single track and to all trains in their proper direction at the second station. These precautions will undoubtedly result in absolute safety; at least they have done so, within my own knowledge, for the past 15 years.

CHICAGO.

Speed of Express Trains in France.

About three years ago there appeared in the memoirs of the French Society of Civil Engineers a study by Mr. Varennes of express train speeds in France, which we have long intended to translate, but only now have found occasion to do so. What follows is a free translation and much condensed:

The study of speeds is made to cover the period from 1854 to 1895, inclusive. Train speeds may be divided into three classes: (1) commercial speed, which covers the whole time from terminus to terminus; (2) the actual running speed, which is the speed at each instant and highly variable, and finally (3) the mean running speed, which represents the time in motion and which is obtained by subtracting from the commercial speed the time lost by stops at stations.

This mean running speed the author does not accept as of value in comparison, for there is time lost while making the stop and while accelerating up to the journey speed. It seems to be the practice of the companies generally to consider that two minutes are lost in this way. Therefore, Mr. Varennes gets a speed which he calls the mean speed under full headway, and this he obtains by subtracting from the total time occupied in the journey, the actual stop at stations and two minutes more for each stop. Thus from the official time-tables he gets at the speeds used in his comparison.

For comparison he has taken the fastest regular trains run on the various important railroads since 1854, and these are: for the Eastern Railroad, the train from Paris to Nancy (219 miles), for the Southern, the train from Bordeaux to Cette (295 miles), for

from Paris to Calais has 7.1 per cent. of such grade and the line from Paris to Bordeaux has 1½ per cent. of such grade, while from Paris to Havre and from Bordeaux to Cette there are no grades as heavy as one-half of 1 per cent.

The results of the studies of the time tables are shown in the diagram, which gives year by year the speeds reached by these selected trains. It will be seen that the regular Paris to Calais train on the Northern reached in 1895 a speed of 51 miles an hour, but very recently the train between Paris and Lille has been speeded up to touch 52.9 miles an hour, as shown at the very top of the diagram. The Northern Railroad was for several of the earlier years a leader in high speeds, but from 1875 to 1890 it was behind the Orleans Railroad. In 1890, however, and again



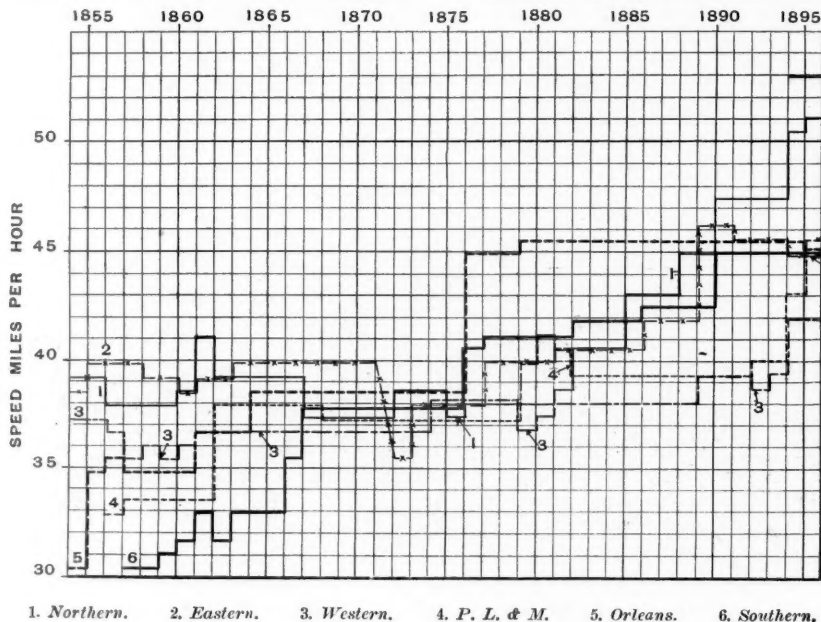
Passenger Station at Dalton.

in 1894 this train was speeded up considerably. This same railroad took the initiative in the use of the bogie truck and of compound cylinders for its locomotives.

In recent years the Paris, Lyons & Mediterranean has made considerable improvement. Its first important acceleration coincides with the adoption of the bogie truck and of the Serve tubes. The other acceleration coincides with the introduction of four-cylinder compound locomotives.

The fastest short distance trains that Mr. Varennes finds are one which runs 16.8 miles at a speed of 95 kilometers an hour, and another one which makes 78 miles at 53.4 miles an hour.

The types of engines hauling the trains, the speeds of which are compared on the diagram, are shown in outline. The Crampton engines of 1854 for many years showed marvelous qualities on the Eastern, the Northern and the Paris, Lyons & Mediterranean. The Southern and the Orleans used single driver engines, with carrying axles forward and back of the drivers, as shown by the Lyons type. These engines had outside cylinders. A variation of this type was the Buddicom engine, used on the Rouen line.



Speed of Express Trains in France from 1855 to 1896.

the Northern the train from Paris to Calais (232 miles), for the Orleans, the train from Paris to Bordeaux (359 miles), for the Western the train from Paris to Havre (142 miles), and for the Paris, Lyons & Mediterranean the train from Paris to Marseilles (536 miles).

On none of these runs are the curves sharp enough to necessitate slackening speed and the profiles of the lines are near enough alike to make a comparison between them just. None of them have grades steeper than one per cent. Setting aside everything less than one-half of one per cent. and considering only grades between one-half of one per cent. and one per cent. it is found that of these grades the line

As time went on, four different types of engine were created. The type of the Northern, known as the "Outrance," was characterized by a large firebox resting on the rear axle, inside cylinders and a bogie truck forward. The Western type has three axles, the two in the rear being the driving axles and the forward simply a carrying axle. The cylinders are inside and overhang the carrying axle. The firebox is of small dimensions and overhangs the rear axle. The types of the Western and the Southern have three axles, one being a carrying axle forward. The cylinders are outside, the connecting rod acting on the rear driving axle. The Orleans and the Paris, Lyons & Mediterranean engines have

*"Meeting orders must not be sent for delivery to trains at the meeting point if it can be avoided."

four axles, two of these, one forward and one in the rear, being carrying axles, and the cylinders are outside and overhang the carrying wheels.

In 1889 the Paris, Lyons & Mediterranean Company undertook some tests to determine the stability of these high speed French engines. These experiments were made March 30 and April 2 on a bit of track about 21.1 miles long. On about 6.2 miles of this track the roadbed and permanent way had been especially lined, surfaced and tamped, while the

engines are extremely powerful and are perfect from the point of view of flexibility and stability, and we see by the diagram the considerable increase in speed which they have permitted on the Northern and the Paris, Lyons & Mediterranean, even with very heavy trainloads, loads much to heavy in my judgment. The Southern and the Western roads have also put in compound engines, but the Eastern Railroad has sought the solution of the problem of great speed in a different direction. Retaining its

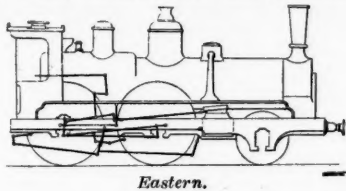
tion of safety would forbid this speed being realized in regular service on the railroads as they exist today. It is absurd to assume that it is more dangerous to run at 74.5 miles an hour on a level or on an ascending grade than on a descending grade. It is interesting to notice that in 1853, and in following years, speeds of 74.5 miles an hour have been realized over iron rails weighing 60.5 lbs. per yard, having feeble joints and being only six meters long. These rails were laid on ties frequently of small bearing surface and on roads poorly ballasted. To-day the rails are of steel; they are 39.4 ft. long; they weigh 90.8 lbs. per yard; the joints are solidly fastened; ties are nearer together and present larger bearing surface and are laid in better ballast. Forty years ago there was no block system, there was no locking of switches and there was no interlocking; locomotives had a smaller wheel base, less flexibility and less stability. Nevertheless, through all these years we have stuck to the maximum limit of 74.5 miles an hour, established in 1853.

Perhaps our ancestors were bold; certainly we are pusillanimous.

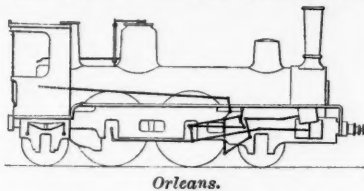
But for a regular service at high speed we must have great running freedom for the trains; that is, the track must not be lined with signals commanding them to reduce speed. We must have facing point switches locked, and we must have perfect interlocking. All these things have long existed in England, and I do not see why they should be confined to either side of the channel. Of course, we must recognize that certain French companies have begun to realize and carry out these measures. Let us hope that they will soon become general.

Mr. Charles Rous-Marten, in the February issue of the Engineering Magazine, gives the results of recent observations of locomotive work on the Northern Railway of France during four recent visits. The results obtained are much better than any that have come under his notice in the course of many years experience with British railroads. This French road has one train booked at 57.7, one at 56.3 and two at 55.3 miles an hour. This last speed is the maximum for the English Great Northern. The Caledonian Railway of Scotland is the only British line which has a faster schedule run than this French road, making a short run of 32½ miles at 59.1 miles an hour. The Caledonian road also has another at 56.5 and a third at 55.6, which are unequalled on any other road in the United Kingdom. The Great Northern of England has two runs timed at 55.3 miles an hour, while the Great Central has a short distance booked at 55. The writer notes that 10 years ago the Northern of France had no run put down for more than 43 miles an hour from start to stop, but it has improved its service until now there are no less than 26 express

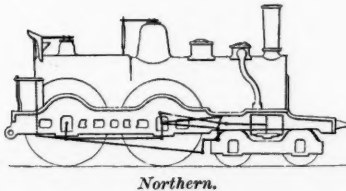
1895,



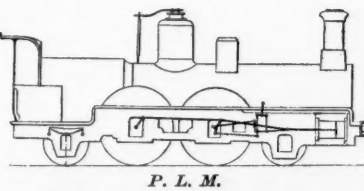
Eastern.



Orleans.



Northern.



P. L. M.

Types of Locomotives used in the French High Speed Trials in 1889.

other 14.9 was left in the ordinary condition. The Eastern, the Northern and the Orleans companies were invited to take part in these experiments.

In the course of the tests the engines reached speeds of 74.5 and 80 miles an hour. On the 6.2 miles of specially prepared track all of the engines behaved well. On the other 16.8 miles, however, considerable differences were found in the performance of the engines. Those of the Paris, Lyons & Mediterranean and of the Orleans road were found to be very sensitive to the irregularities of the track, while the Northern and Eastern engines showed no such sensitiveness. Moreover, the engineers of the Paris, Lyons & Mediterranean found no signs of disturbance of the track after the passage of the Northern and Eastern engines, while light deformations were observed after the passage of the locomotives of the Paris, Lyons & Mediterranean and the Orleans.

An examination of the four types of engines used in these experiments will reveal at once the causes of the difference in stability. The engines of the Paris, Lyons & Mediterranean and of the Orleans have a great overhang forward. Moreover, when the big end of the connecting rod is at its lowest point there is an instant when the work of the steam on the piston tends to relieve the load on the forward axle. The Eastern locomotive has no overhang, as is true of the Northern engine, and in the latter case the cylinders are inside the frames. Furthermore, the Northern has a bogie truck, which gives great flexibility. The result of these interesting experiments was to condemn the type of locomotive with outside cylinders overhanging the first axle.

In 1890 the Paris, Lyons & Mediterranean Company undertook some new experiments with the end of further investigating the behavior of engines at high speed, and also with the end of getting information as to their performance in hauling heavy loads of from 250 to 300 tons. Engines of the four types tested in 1889 took part in these tests, and besides an engine from the Southern, one from the State Railroads, a Crampton engine from the Eastern, having a Flaman boiler, and an engine from the Western Railroad belonging to a new bogie type, brought out by that company, and, furthermore, an engine from the Orleans was entered, having cylinders inside the frames.

In these trials the greatest speed was made by the Eastern (Crampton) engine, with a Flaman boiler and which easily ran up to 89.2 miles an hour and the motion of which was very steady.

The new engine of the Western was distinguished by its remarkable steadiness of motion, particularly on entering curves. The Southern engine reached a speed of 85.5 miles an hour.

The trials under heavy load consisted in hauling a train of about 250 tons at a mean speed of 43.5 miles an hour from Paris to Laroche (96 miles) and return. The Northern engine gained 11 minutes in going and 10 in returning with a load of 250 tons. The Western gained nine minutes going and 11 returning with the same load. The Paris, Lyons & Mediterranean and Orleans engines hauled a train of 294 tons and reached the prescribed speed in spite of the violent wind, the dynamometer showing a pull of from 4,180 to 5,500 lbs., corresponding to a work of from 600 to 700 h. p. The other engines, considerably less powerful, reached with more or less effort the schedule with a load of 240 tons, which was manifestly better than they could do in regular service.

Following these experiments, new types of locomotives were brought forward. The Northern and the Paris, Lyons & Mediterranean use compound engines with four cylinders, having four-wheel leading trucks and Serve tubes in their boilers. These

single expansion engines, it has put on Flaman boilers, carrying a great volume of water. The heating surface is 1,937 sq. ft., the firebox has 146 sq. ft. of heating surface, the cylinders are 20 in. diameter and 26 in. stroke. These engines have an enormous evaporating power and can produce a tractive effort of 13,552 lbs. at the rim of the driving wheels. These engines have four-wheel trucks forward, and their motion is very soft and steady. The Orleans Company retained its type of 1889 with four-coupled drivers and inside cylinders without the bogie truck.

We return now to the express speeds, which vary from 52.9 miles an hour on the Northern to 41.7 miles an hour on the Western. These are the mean speeds under full headway, which, of course, involve much higher maximum speeds. The maximum speeds authorized in daily service by the various companies are:

Northern, 74.5 miles an hour.

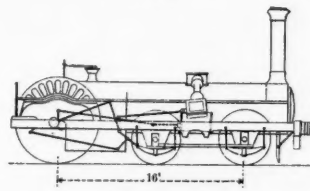
Eastern and Orleans, 50 per cent. greater than the normal speed of the train, being at present a maximum of 69.6 miles an hour.

Southern and Paris, Lyons & Mediterranean, 62.1 miles an hour.

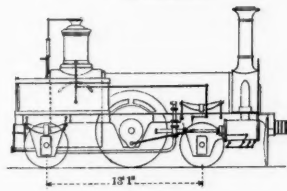
Western, 55.9 miles an hour.

These actual journey speeds are reached every day

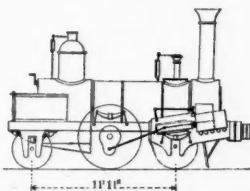
1854.



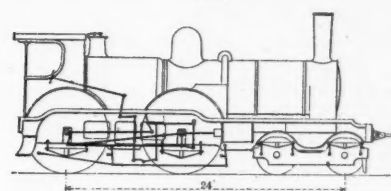
Crampton.



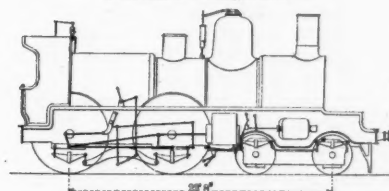
Lyons.



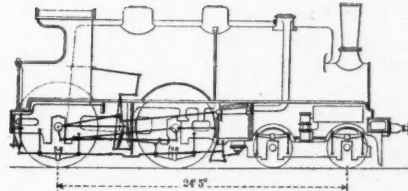
Buddicom.



Northern-Compound.



P. L. M.-Compound.



Eastern (Flaman Boiler).

Typical French Locomotives in 1854 and in 1895.

on the French lines. The speed of 74.5 miles an hour was authorized by ministerial decree in 1853, and has been reached since that time on down grades by Crampton locomotives. It is then the increase of speed on the level and on ascending grades which have given the accelerations shown on the diagram. Actually, then, for 42 years French railroad speeds have reached 74.5 miles an hour in regular working, and no accident attributable to this speed has ever happened. This experience is long enough to be conclusive.

Thus, when any one shall build a locomotive powerful enough to haul a heavy express train at 74.5 miles an hour on levels and up grade, or if we should put in service lighter express trains, no ques-

trips timed at a speed of 50 miles an hour and upward from start to stop. His object in comparing the best French service with some of the English runs is simply to show the remarkable advance made by the French road, whereas a comparison made 10 years ago between the English and the French runs would have been favorable to the former. The runs for speeds of 50 miles and over on the Northern of France, are for distances ranging between 28 and 104 miles. The three fastest runs were between Paris and Amlens, Paris and St. Quentin and Bourlogne T. and Amlens, the distance being, respectively, 81½, 95½ and 77½ miles. The runs from Calais Pier to Amlens and return, a distance one way of 104 miles, is booked at 52 miles an hour.

The Association of Maintenance of Way Engineers.

An adjourned meeting of the American Railway Engineering and Maintenance of Way Association was held at Buffalo Thursday, March 30, for the purpose of completing a permanent organization. The attendance was small, but it was representative and obviously in earnest. A few extracts from the constitution which was adopted at that meeting follow:

The object of this Association shall be the advancement of knowledge pertaining to the scientific and economical location, construction, operation and maintenance of railroads.

The means to be employed for this purpose shall be as follows:

Meetings for the reading and discussion of papers and for social intercourse.

The investigation of matters pertaining to the Objects of this Association through Standing and Special Committees.

The publication of papers, reports and discussions. The maintenance of a library.

Any Civil, Mechanical or Electrical Engineer, who has had five years' experience in the location, construction or maintenance of railroads; and any railroad official who is responsible for or has supervision of maintenance-of-way matters (embracing all grades of officials, from General Managers to Engineers of Maintenance-of-Way in charge of Divisions inclusive), or railroad men bearing other titles but performing similar duties, shall be eligible for active membership.

An Honorary Member shall be a person of acknowledged eminence in railway engineering or management. The number of Honorary Members shall be limited to ten.

Persons who are exclusively engaged in the sale or promotion of railroad patents or appliances shall not be eligible for membership in this Association.

The officers of this Association shall consist of a President, two Vice-Presidents, six Directors, a Secretary and a Treasurer, who shall constitute the Board of Direction in which the government of the Association shall be vested; and who also shall act as Trustees and have the custody of all property belonging to the Association.

The term of office of the President, Secretary and Treasurer shall be one year; of the Vice-Presidents, two years, and of the Directors, three years.

The Board of Direction may appoint such Standing Committees as it may deem best, to investigate, consider and report upon methods or appliances pertaining to the general question of railroad location, construction or maintenance.

Special committees to examine into and report upon any subject connected with the purposes of this Association may be appointed [by the Board at the request of ten members, or by a vote of the Association.]

After the constitution was adopted the following officers were elected: President, J. F. Wallace, Assistant Second Vice-President Illinois Central; Vice-Presidents, P. A. Peterson, Chief Engineer Canadian Pacific, to serve for two years, and W. G. Curtis, Engineer Maintenance of Way, Southern Pacific, to serve for one year. Directors to serve for one year, W. H. McFarland, Auditor Georgia & Alabama Ry., and Hunter McDonald, Chief Engineer Nashville, Chattanooga & St. Louis; to serve for two years, D. J. Whittemore, Chief Engineer, Chicago, Milwaukee & St. Paul, and F. H. McGuigan, General Superintendent Grand Trunk; to serve for three years, A. Torrey, Chief Engineer Michigan Central; Thomas Rodd, Chief Engineer Pennsylvania Lines West of Pittsburgh, and L. C. Fritch, Division Engineer Baltimore & Ohio Southwestern; and Treasurer, W. S. Hawley, Chief Engineer Chicago & Eastern Illinois.

Mr. Torrey, as Chairman of the preliminary organization, presided until the election of the officers, when Mr. Wallace took the chair. Mr. Wallace, as Chairman of the Committee on Constitution and By-Laws, had already stated the objects of the organization, and therefore an address on assuming the seat of the President was not necessary.

The Association being now permanently organized, the Governing Board will shortly meet to select a list of topics and committees and to appoint a time and place for a general meeting of the Association.

Automatic Couplers in England.

The Government have tackled more than they bargained for in introducing the Automatic Coupling Bill on the mere ipse dixit of Mr. Hopwood. It has cost them the support of Lord Claud Hamilton, Chairman of the Great Eastern Railway. We presume it is to this measure he more particularly refers when he alludes to "fresh attacks upon capital which have already commenced during the present session, whilst the Department specially created for the protection of trade proposes to impose upon the trade of the country an expenditure of many millions of unproductive capital, without previous inquiry and on the flimsiest pretences."

The cost of the new couplings, about £10 per wagon, will fall most heavily on private owners, and we are not surprised to see the Midland coal merchants and colliery owners crying out. America seems to be the model selected by the Board of Trade in this matter, but we fear it is the old case of cows far off having long horns. A correspondent points out that in American railways in 1897 "the percentage of fatal accidents due to coupling and uncoupling is four times greater than in the United Kingdom, so that it may be argued that the adoption of the American automatic coupler would mean increasing rather than decreasing the death rate in England."

In any case the matter should have been thor-

oughly sifted by a Royal Commission or otherwise before the Government rushed into legislation. After all, the railway companies are the greatest sufferers through the loss of life and limb, more especially under the new Compensation Act, and they should have been consulted first of all. They have the largest experience of what is practicable and what is not. Their amenableness to any reasonable request by the Board of Trade, even without statutory authority, has been over and over again testified to. The necessity, therefore, for drastic legislation is not apparent, and it is to be hoped the Whitehall authorities will recognize the fact before their ill-advised officiousness has in-

itor can be opened, and by the use of the heating blowers the entire building can be cleared of dust, smoke and steam when shaking out castings or pouring metal.

Probably the most interesting mechanical feature of the new foundry is in the construction of the core oven and the method of working the core cars. In Fig. 2 is shown a section of the oven, with a car inside. Attached to either end of this car are solid plates, 6 ft. 3 in. square, as shown in full lines on the view to the right, which serve as a door to the oven

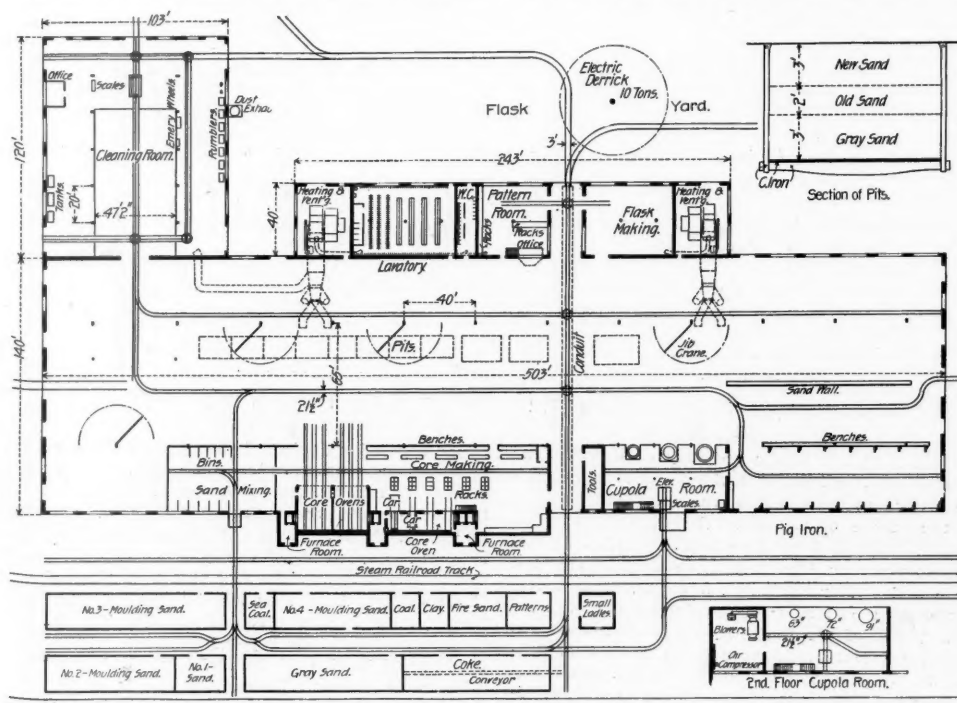


Fig. 1.—Floor Plan of General Electric Company's Iron Foundry at Schenectady.

involved the Ministry in further trouble. The railway companies are determined to have their say all the same, and have already taken steps for collecting impartial evidence in the United States.—Hera-
path's Journal.

The New Iron Foundry of the General Electric Company.

A foundry, with an abundance of sunlight in the daytime and electric light at night, equipped with modern appliances and using only modern methods of driving the machinery, with core oven of novel design and the whole layout the most convenient possible, sums up the leading features of the new iron foundry of the General Electric Co., at Schenectady, N. Y.

The main building is 503 ft. long by 140 ft. wide. The general floor plan, with the more important dimensions, is shown in Fig. 1. Reference may be made to some of the mechanical features. The cupolas are arranged so as to favor small work, no metal being carried more than 120 ft. The room for cleaning and chipping, shown in the upper left-hand corner of the plan, is away from the main floor, leaving a room 503 ft. x 140 ft. for moulding work.

when the car is completely inside, as in Fig. 2, or when it stands wholly outside. In the latter position the plate on the end to the right serves to cover the opening through which the car enters or leaves the oven. As shown in Fig. 1, there are four of these cars in the oven. These cars are run in and out by compressed air, the pipe connections for the air being shown in Fig. 2. The 6-in. cylinder directly under the cars contains a piston, by means of which the car is pushed out and the front is held firmly against the inside of the framing at the opening. By a movement of the 4-way valve the piston in the cylinder is forced inward. This piston, being attached to the car, draws the car into the oven, and the entrance is closed by the plate, as indicated in the diagram, Fig. 2. Air for this work is compressed by a small compressing equipment such as is used on cars for air brakes. A small electric motor near the oven drives a small compressor.

The workmen are well supplied with lavatory conveniences. Each man has a locker, the door of which is made up largely of wire netting, thus keeping the lockers well ventilated. There are plenty of wash bowls and shower baths to meet the needs and convenience of the men.

Electric motors are used throughout the foundry.

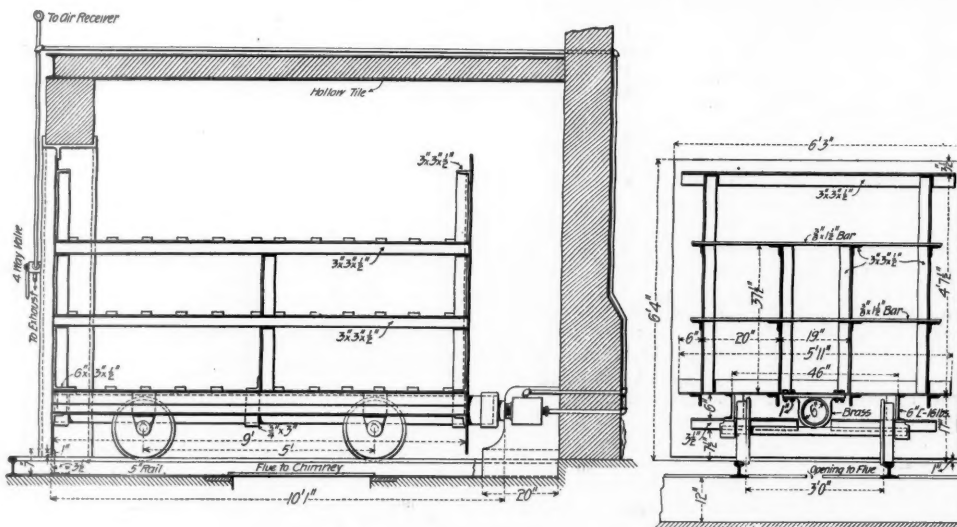


Fig. 2.—Car in Core Oven at Schenectady Foundry.

Covered conduits extend across the entire width of the building for all piping and electric conductors. There are seven electric cranes in the building, and eventually there will be six jib cranes. The portable jib cranes serve the different pits as required. By means of a convenient device, the ventilators and the windows in the mon-

The largest is 60 h. p. and drives the cupola blower. There are two G. E. 52 motors driving the cupola 40-ton crane, one 5 h. p., and one G. E. 51 also used for the traveling cranes and smaller ones for the jib cranes and others that are required for lighter work. A mere mention of this part of the work may be sufficient to indicate to what extent

modern methods have been used in the Schenectady foundry. Almost every machine that requires power is driven by an electric motor, from the sand mixer to the heaviest cranes.

In the foundry there are three Calliau cupolas of 18, 11 and 7 tons melting capacity per hour. The Root blower has a capacity of 660,000 cu. ft. of air per hour at 95 revolutions. There is a 2,200-lb. hydraulic elevator, a Sellers sand mixer, 40-ton Morgan crane of 65 ft. span, and two of the same make cranes, but of 10 tons, having spans respectively of 65 and 47 ft.

The half-tone (Fig. 3) is from a photograph taken during the construction of the building. From

will probably be to drive groups of light machines by belts and short shafts, which in turn are driven by motors, while separate motors will be put on the heavy machines.

This contemplated expenditure for shop improvements is but one item of the programme for this year, as about \$8,000,000 will be spent by the Chicago & Northwestern in all departments for betterments.

Railroads in Cuba.

The Travelers' Official Guide for April contains time-tables of the railroads in Cuba which connect with Havana, about 900 miles, and short notices of

weight was \$1.30 in Spanish silver, equal to 78 cents American money. The railroad fares are generally about 5 cents a mile in our money, or about 8 cents a mile in Spanish silver. The ticket agent does not have an enviable time in making change. He now has three currencies to deal with, viz., American money, Spanish gold and Spanish silver. The current value of silver, which varies from day to day, affects the rate of exchange, which is announced in the daily papers. American soldiers in uniform are allowed to travel at half fare. On one road, where a large number of troops were encamped, tickets of the same issue were being sold at one rate to soldiers and another rate to civilians. How that ticket agent settled his accounts with the auditor, if he had one, must remain a mystery. * * * Each train, as a rule, consists of three coaches, respectively first, second and third class, although the classes are occasionally divided by partitions in the same car. Conductors wear service caps, but generally are not otherwise uniformed. They compare favorably in appearance with the conductors in the United States, especially with those on roads with a similar amount of passenger traffic. In every instance they were found intelligent, very courteous and attentive to their duties. The enginemen are apparently white men. Firemen and brakemen appear to be of any grade of color. Barefoot brakemen on a passenger train are not uncommon, but in a climate where young children wear no clothes at all, the absence of shoes on a brakeman hardly excites comment. On the Cardenas & Jucaro Railway a buffet is run in the baggage car, and various articles to eat and drink are served on the passenger coaches by one of the employees of the train.

At city stations there are always plenty of porters and carriages, and generally an interpreter on hand. A porter's fee for carrying three valises and a trunk, the latter on his head, from the baggage car in Regla to the ferry and across, including loading the baggage on a carriage in Havana, was one Spanish silver dollar. If the activity of porters at or in the vicinity of railroad stations is any indication, the Cubans may well be called an industrious race. Men will run alongside a carriage approaching a station for half a mile for the sake of obtaining a fee of twelve cents for the job of carrying the traps to the train. They will jump on a moving train a mile before reaching a terminal for a similar purpose and the same fee. Cab fares in the cities are very reasonable. In Havana 20 cents in Spanish silver pays for a ride for two for about a mile. No extra fee is expected by the driver, who touches his hat and thanks you when you pay him.

Railroad Building in Nova Scotia.

The new railroad building in Nova Scotia last year and the proposed work for the coming year is summarized below as follows:

Midland of Nova Scotia.—Mr. Z. J. Fowler, chief engineer, reports that the contract for building was entered into in November, 1897. Plans and profiles were submitted for the first 38 miles from Windsor and contractors started work at once. On Sept. 1 plans and profiles of a line from the 38th mile, to Truro (19½ miles), were submitted to the Government Engineer, but approval was deferred.

Great Northern of Canada.—Messrs. Ross, Barry & McRae have contracted to complete the building of this road, extending from the end of the present track at Shawenegan to Hanksbury, a distance of 88 miles. All the bonds, subsidies and bonuses have been transferred to these gentlemen, and they have agreed to finish the road in 18 months.

Musquodoboit Ry.—Chapter 126 of the N. S. Acts of 1893 constituted Alex. Stephen, Mayor of Halifax, William Chisholm and 66 others a body corporate to build this line from Windsor Jct. on the Intercolonial Ry. easterly by the Musquodoboit Valley a distance of 40 miles to Parker's Corner, or from Dartmouth easterly to Musquodoboit Harbor, with power to extend the line to Halifax.

Coast Railway of Nova Scotia.—Work on this road during the past year has been very light, only about 80 men having been employed and these spread over 20 miles of the line between East Pubnico and Barrington Passage. This number also includes those employed on a preliminary survey between Shelburne and Halifax. The contract was made on Sept. 12, 1896, and provides that 50 miles of railroad, between Yarmouth and Lockport, be completed and in active operation before Oct. 1, 1898. The progress stands at 31 miles, from Yarmouth to East Pubnico, completed and operated. Twenty miles following, from East Pubnico to Barrington Passage, is being prepared to receive the rails. The remaining 39 miles, from Barrington Passage to Lockport, has only been surveyed and the timber taken off. About half of the 20 miles between East Pubnico and Barrington Passage has been graded and culverts built for the first 14 miles from Pubnico, and sleepers also distributed over the same distance. Surveys have also been made for that part of the line between Shelburne and Halifax, but so far no work done.

Dominion Eastern.—The company on May 7, 1898, contracted with the Provincial Government of Nova Scotia to build a standard gage from a point on the Nova Scotia Steel Company's Railroad, at Sunny Brae, via Melrose and Country Harbor Cross Roads, to the town of Guysborough, 76 miles. Work was to begin July 17, 1898, the first 30 miles to be completed Dec. 31, 1898, and the entire line by July 1, 1901, or the company to forfeit all claims to subsidy. Very little has been done.

Inverness & Richmond.—Engineers have been surveying and locating from Port Hastings, via Port Hood and Mabon, to Broad Cove over this line. But very little has been done on construction. The company stands a chance of losing its \$10,000 deposit with the Provincial Government as security for the construction of the road, as well as a cash subsidy of \$3,200 and 2,000 acres per mile, if the road is not finished by July 1, 1899. The road is not to exceed 58 miles in length and to be in operation by Aug. 1, 1899.

Harvey Railway (Nova Scotia Southern).—Mr. J. J. Taylor, C. E., formerly of Moncton and now in Liverpool, N. S., is about to take out a surveying party on

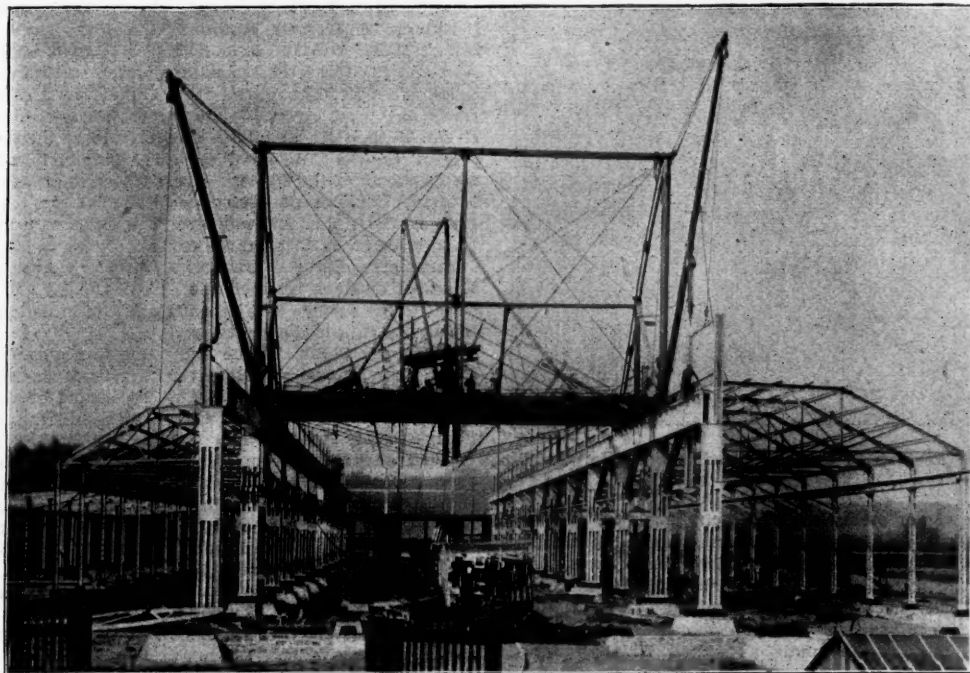


Fig. 3.—Frame-Work of New Iron Foundry at Schenectady.

this view one may obtain a pretty accurate notion of the framework of the foundry.

Specifications for the foundry were sent out March 3, 1898, and contracts were let March 25 of the same year. Ground was broken April 12 last, and the building was used for the first time Jan. 5, 1899. The steel work was done by the Hilton Bridge Co.

The cubic content of the building is 3,550,000 ft. In the building 1,200 tons of steel were used, and 1,833 cubic yards of concrete and about two-thirds as many cubic yards of stone. There are 23,336 sq. ft. of skylights. The capacity of the sand sheds is 6,000 tons, and the coke shed, 600 tons.

In the layout every reasonable effort was made to facilitate the work of moving the iron, fuel, sand and other material that is moved from one place to another when the foundry is being used.

Improvements at the Chicago & Northwestern Shops, Chicago.

The Chicago & Northwestern is planning extensive improvements at the West Fortieth street shops, Chicago, which will be completed by December next, and are estimated to cost about \$275,000. The plan includes an annex, 100x150 ft., to the present erecting shop, which will be equipped with new tools and used as a general machine shop for making standard parts, such as are used at various points on the system. This will permit the machines now in the erecting shop to be used solely for making parts needed in the general repairing of locomotives, which change will materially increase the capacity of the erecting shop for turning out locomotives. A gallery will also be built on all sides of the erecting shop, so that in all the floor space for machine work will be increased by about 23,500 sq. ft.

A boiler shop will be built, of modern design, 120x300 ft., which will be served by a 50 or 60-ton overhead electric crane running the entire length of the shop, and also by an auxiliary electric crane of about 10 tons capacity. The boiler shop is now well equipped with hydraulic riveting machines, but some new hydraulic flanging machinery will be added; the present boiler shop will then be used as a paint shop. The present tank shop, which is 80 ft. wide, will be extended 140 ft., and the roof of the present shop will be raised 5 ft. to give sufficient clearance for an overhead electric crane.

Probably the most interesting part of these changes is that a large central power house will be built containing two generators, one a 120-k.w. and one a 50-k.w. machine, together with suitable engines and boilers. All the shops will be equipped so as to be electrically driven, but the details of the plan for distributing power to the different shops have not been definitely decided. The general plan

the other railroads on the island, together with a full-page map. There are in all about 1,100 miles of railroad in Cuba. A comparison with the list published in the Railroad Gazette of July 8, 1898, shows four railroads which did not appear in that list. These are the Casilda Bijaba, Santa Clara Province, 18.5 miles; Jugaro & San Fernando, 37 miles; Rodas Turquino & Cartagena; and the Vinales Muelle, Pinar del Rio Province, 15 miles. Mr. Allen, Manager of the Official Guide, made a visit to Cuba to get the data for these time-tables, and he publishes some interesting notes on what he saw there. He says, in part:

The trend of the heavy traffic on the island is now and is always likely to be between the interior and the nearest seaport town. If the exports are for the United States a port on the northern coast is preferable. If for Europe, southern ports are equally available. The island is from 30 to 80 miles in width, with steamer lines plying on both coasts. A trunk line through the centre of the island for its entire length would, therefore, encounter water competition on both sides. Such a line would probably get more traffic as a feeder to the lines leading to the seaports than through freight. The products of the island vary but little, comparatively, in its different sections, all being in the same latitude, and it is difficult to see what commodities would be interchanged from east to west in sufficient bulk to make a paying through business. A through line from Villa Clara, or Placetas, [the eastern termini of existing railroads from Havana] to Santiago, might be encouraged for governmental purposes somewhat as the original Pacific railroads were in our land, and in the course of time the development of the country adjacent to the line would produce a remunerative business. The products of the soil grow wonderfully fast in Cuba, but cities—the work of men's hands—will not spring up with the rapidity of those on our Western plains. Human nature cannot be depended upon to work with the same continuous vigor under a tropical sun as in a more temperate clime.

The railways of Cuba are not far behind the times, when the conditions by which they have been surrounded, and the traffic they have to provide for, are carefully considered. The right of way is fenced, if that is the proper term to use for cactus hedges or stone walls. The cactus hedge is almost impenetrable and unpleasant to surmount. The roads are laid with steel rails, from 50 to 62 lbs. to the yard, joined with fish plates, with rock ballast and generally well tied and surfaced. Some of the switches are of the stub variety, but split switches are also in use. The couplings are of the old-fashioned link and pin style, but automatic couplers are being introduced. The passenger trains are equipped with air brakes. Freight cars are of smaller dimensions than cars recently built in the United States, and more like those of 30 years ago. Permanent tops are used, not the tarpaulin covers employed on English goods wagons.

The transportation of baggage is charged for, as on European railways. Trunks are weighed and measured, the amount of the charge collected, and a receipt given. A number corresponding to the number of the receipt, with the destination, is pasted on the trunk. This receipt corresponds to the American hand check, and must be surrendered when the trunk is claimed. From Havana to Cardenas, 105 miles, the charge for a trunk of moderate size and

this line, to run from Shelburn to Liverpool, thence to New Germany. The company he represents has plenty of money to build and does not ask a dollar of subsidy until road is finished.

Bicycle Traffic on the Long Island Railroad.

The Long Island Railroad Co. carried on its passenger trains during the six months ending Oct. 1, 1898, something over 176,000 bicycles, each one accompanied by a passenger. This road is peculiarly situated for bicycle traffic and has probably taken more active and intelligent means to stimulate this branch of its passenger business than any other company. An officer of the passenger department, Mr. H. B. Fullerton, has for two years devoted his attention chiefly to this department, and the operating department has made a thorough study of the well known difficulties attending this comparatively new branch of passenger train work. The financial results have been highly satisfactory; it will therefore be of interest to examine in some detail the methods which have proved so successful.

The passenger trains of the company have been patronized to a considerable extent by bicycle riders for several years, the business coming to the road without solicitation. This was due to a favorable combination of circumstances. Long Island has very extensive tracts of level country, it has good roads and it is very near New York City.

The island is about 140 miles long. On the south side there is a fine road, parallel to the shore, more than one-half of which is macadam. This road is for the most part level and includes the most famous "century course" anywhere around. On the north shore there is a fine road two-thirds the length of the island, and it is not far from the North Shore Branch of the railroad. This road is somewhat hilly and has many stretches of woods, thus affording scenery quite different from that found on the south side. There is also a good road for 40 or 50 miles in the central section of the island. Hotels for the accommodation of bicyclists are found everywhere, the stations of the railroad are near together, and altogether the island is the most attractive place for the wheelmen of New York and Brooklyn that is reasonably within their reach. It is estimated that half a million bicyclists live in New York and its environs. Long Island being so level and so attractive, wheelmen, when there, ride long distances, and thus are always under the temptation to return home

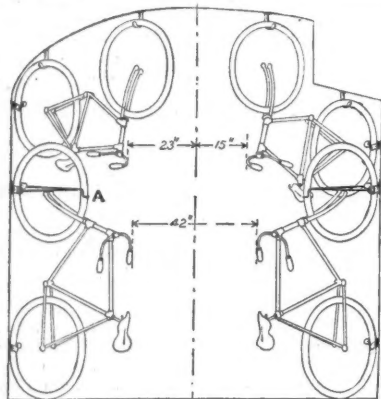


Fig. 1.—Hangers for Bicycles in Baggage Cars.

by railroad. Mr. Fullerton estimates that the average railroad journey of the wheelman on Long Island is 30 miles.

The active promotion of this business was begun when Mr. W. H. Baldwin, Jr., became President of the road. In 1896 the number of bicycles carried in baggage cars was about 55,000; in 1897 it was 165,000, and in 1898 it was over 190,000. On July 2, 3 and 4, 1898, the company handled 25,600 wheels. On May 29 there were seven cars on one passenger train which were used exclusively for the transportation of bicycles.

Mr. Fullerton's work in the bicycle field has consisted almost wholly in advertising the territory and seeing that the employees treated passengers with bicycles in a satisfactory manner. A little pamphlet called "Cyclists' Paradise," with maps, was issued in 1897, three editions being required; and a revised edition was issued in 1898. The co-operation of the League of American Wheelmen being secured, this book was very widely circulated, and it brought a large volume of business to the road. With a small charge for postage and with a little income from advertising, the book paid for itself. As the book became more generally known, the runs of the wheelmen lengthened, so that the number of passengers returning to Brooklyn by railroad in the afternoon showed a large increase. The little books also brought large numbers of tourists from New England, who had before looked upon Long Island as a desert.

Mr. Fullerton has also advertised Long Island widely by articles which he has written for newspapers and magazines, thus reaching many hundred thousand readers.

The company also publishes in the newspapers, during the season, weekly reports of the condition of the roads on Long Island, thus affording bicyclists everywhere within reach of New York a constant guide as to the most favorable time to visit the island. At meetings of wheelmen and at county fairs, from 2,000 to 5,000 wheelmen are attracted from New York and beyond.

As every railroad man knows, a chief difficulty with bicycle traffic is its fluctuating character. A

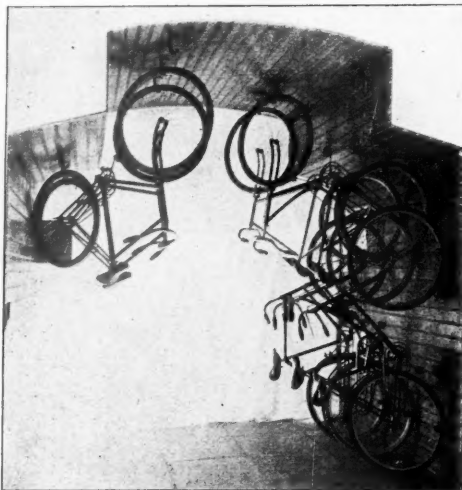


Fig. 3.—Bicycles in Long Island Railroad Baggage Car.

shower or other unexpected circumstance, may send several score, or even several hundred passengers, with bicycles, to a train which ordinarily would have room in its baggage compartment for not more than a dozen wheels. The officers of the Long Island have not accomplished the impossible, but by constant watching of the conditions and by training baggage men at stations and on trains to handle wheels in the easiest manner, have reduced the delays of trains to the minimum, the record in 1898 being a great improvement over that of 1897.

Mr. Fullerton has not devoted his time wholly to the bicycle department, and he estimates that the whole expense for salaries and rent, chargeable to the bicycles, is less than \$1,000 a year. The advertising book, which also contains time-tables, has paid for itself, as before stated.

The baggage cars of the Long Island railroad, which are used for carrying bicycles, have attachments for fastening the wheels in place at the sides and the roof, so that in case of need the whole of the space in the car can be used for this purpose. The accompanying drawings show the arrangement of the fixtures. Fig. 1 shows wheels attached, both at the sides and the top. For ordinary trains, in which the car is not fully loaded with bicycles, the side fixtures can be removed and only those overhead be used, leaving the ordinary baggage space unobstructed. The bracket shown at A is a simple loop of $\frac{1}{4}$ in. round iron. When not in use it hangs down at the side of the car. The casting to which it is attached fits into a wedge-shaped socket, and in the winter, or at any time when the floor of the car is not to be used for bicycles, it can be taken off and stored in a box, which is provided at the end of the car. With the bracket and its casting off, the projection on the side of the car extends out only half an inch.

Fig. 2 is a diagram of the floor of a 60-ft. car fully loaded with bicycles. The solid lines show the position of the lower wheels and the broken lines the position of those hung from the roof. With wheels hung 18 in. apart, center to center, a car of this size holds 136. Practically all bicycles in use are small enough so that they can be spaced 14 in. apart, a car thus taking 156. The bearing surfaces of the hooks depending from the roof are covered with rubber. Those used to hold the bicycles at the side of the car

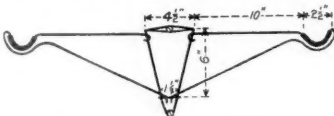


Fig. 4.—Bicycle Hanger.

come in contact only with the tire, and with these, therefore, there is no danger of scratching the enamel of the frame.

Mr. Fullerton informs us that these fixtures have never failed to properly fulfill their function; and the sizes of the wheels vary so little that the loops have been found satisfactory for all wheels presented.

Fig. 3 is an engraving made from a photograph of a car on the Long Island road. Fig. 4 shows a form of bracket used in some of the baggage compartments of combination cars. The two hangers are so fitted as to act as springs. When not in use they lie against the side of the car, as shown in the cut; to

use one, the baggageman pulls it out by the outer end holding it until the wheel is placed in position.

From the prices mentioned, we judge that it costs about \$75 to fit up a 60-ft. car.

The Manhattan and Third Avenue Railroad Agreement.

A traffic agreement between the Manhattan Elevated Railway Co. and the Third Avenue Railroad Co., New York city, was announced on Monday of this week. This will give a complete series of transfers between the lines worked by the two roads, and is to go into effect by May 1.

The Third Avenue road controls the Dry Dock, East Broadway & Battery Railroad, the Forty-second Street, Manhattanville & St. Nicholas Avenue Railroad and the Union Railway lines, which will afford crosstown transfers to and from the elevated railroads at Canal street, Grand street, Forty-second street, 100th, 110th and 135th streets, and at all the streets in the Twenty-third and Twenty-fourth wards (north of the Harlem River) where connection is made between the Suburban Elevated and the lines of the Union Railway Co. The uniform price for a transfer is to be three cents.

Passengers may also transfer at all Third Avenue Elevated stations between the City Hall and 177th street to the surface cars beneath, and continue their journey to intermediate streets.

The upper Tenth avenue cable line and also the Amsterdam avenue and Boulevard lines will be connected with the lower West Side by means of the elevated railroads at 125th street, 66th street, and Forty-second street. The public will secure a marked advantage from the transfer between the elevated road at 135th street and Eighth avenue, and the Union Railway Co.'s trolley lines, running across the Madison avenue bridge and connecting to Yonkers on the Hudson River and New Rochelle on the Sound, for eight cents. It is expressly provided that the eight-cent fare shall apply to express as well as local trains.

Commenting on the agreement, Mr. Lauterbach, for the Third Avenue Railroad, said:

"The advantages to accrue are at least equal, and it seems to me in most respects greatly superior to those that could be derived from transfers from the underground railway, and this is entirely irrespective of the point that in one case the benefit is immediate and in the other remote. How much further the union of interests between the two systems will be carried, after this first important step shall have been taken, can only be surmised, but immediate economies to the advantage of both companies will certainly be realized in the joint use of power houses, now in process of construction and contemplated to be erected."

President George J. Gould, of the Manhattan, says that by carrying out this agreement they will not only extend the service of the elevated road to Yonkers and New Rochelle, but by crosstown lines secure direct connection with the Pennsylvania Railroad at Desbrosses and Cortlandt streets and with other ferries on the east and west sides.

That Soudan Bridge.

The bridge built by Messrs. A. & P. Roberts, of the Pencoed Bridge Works, appears to have stirred up some of the English bridge builders to say some foolish things, if we may believe half the alleged interviews that are cabled across. But we do not attach



Fig. 2.—Arrangement of Bicycles in Baggage Car.

much importance to that, because the daily press news writers have a great gift of color. We can, however, give a few interesting facts from first hands.

The bridge is to be built across the Atbara River, on the line of the Soudan Military Railroad, which Lord Kitchener has caused to be built between Wady Halfa and Khartoum. The Atbara is the last affluent of the Nile and comes in between Berber and Khartoum, having its source in the mountains and highlands of Abyssinia. It fluctuates enormously in volume between the wet and the dry seasons. At its lowest stages it carries very little water, and the rise is as sudden as in some of the Texas streams. The Sirdar decided to have the bridge thrown across this spring and early summer, and while the foundations were put in during low water the superstructure will have to be erected with the river at its flood.

Colonel Western, R. E., acting as Chief Engineer for Lord Kitchener, endeavored to place the order for the superstructure in England, but the best promise of delivery that he could get was six and a half months. It was decided then to try American builders, and Colonel Western, acting for the Soudan Government, and Messrs. Jacobs, Barringer & Davies, acting for Messrs. A. & P. Roberts, closed a contract for the superstructure. The total weight is between 700 and 800 tons, and it was specified that the design

should be such that the bridge can be erected without false works. Otherwise the type and design were left to the builders, who contracted to deliver the work within 42 days, on the cars at Philadelphia. It was actually completed in 40 days, and would have been done in 28 days but for the storms of February, which hindered the delivery of material. There are seven spans, aggregating, we believe, about 1,100 ft. in length.

The bridge is to be erected by putting up a shore span and using this as an anchor for the first river span, which will be run out as a cantilever, and so successive spans will be pushed forward.

In the daily papers Mr. Rigby, of the firm of Rigby & Westwood, is quoted as saying:

"I simply do not believe that any firm in the world can turn out a bridge of that size in the time mentioned. We and other British firms made special efforts to secure this particular contract. At a meeting of our directors, who are all connected with large steel mills, it was agreed to divide the supply of the requisite material and let other orders wait. We made a very low tender, guaranteeing to deliver the bridge by April 30, but no tenders of British firms were even acknowledged. Of course a bridge has undoubtedly been shipped from Philadelphia, but I absolutely decline to believe that the work on it was commenced on Feb. 8. The American firm either had the specifications before or adapted a standard bridge to suit the requirements of the case. No other explanation is possible."

Concerning the above Mr. Roberts says:

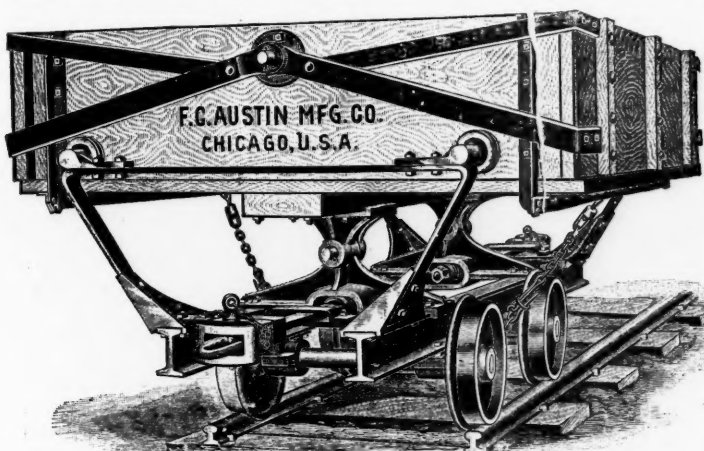
"I scarcely need say that there was nothing underhanded about our securing the contract. We had no specifications in advance or any advantage over English firms. But Mr. Rigby's remark that no firm could turn out a bridge of the size needed in the time we have will make American bridge builders smile. Instead of preparing the work in seven weeks, we could have done it in seven days if absolutely necessary."

Vertical Hollow Chisel Mortising Machine.

The accompanying engraving shows a new vertical hollow chisel mortising machine recently built at South Boston, Mass., by the S. A. Woods Machine Co., of Chicago, for the Hegewich shops of the Illinois Car & Equipment Co. This machine is the latest in design and heaviest of any of its class. The feed is automatic, is very quick and positive. It is capable of mortising up to 3 in. square. The pulley of the bit spindle has a double spiral grooved surface, which releases the air from under the belt and gives 30 per cent. more pulling power than the ordinary smooth faced pulley. The heavy tool frame readily travels on roller bearings and moves to stops. The machine shown has a steel timber carriage 38 ft. long, which travels to stops by power and hand feed. A short table can be furnished, which is readily raised and lowered to suit a large range of work.

The Austin Dump Car.

The accompanying engraving shows an improved dump car, which is being put on the market by the F. C. Austin Manufacturing Co., Harvey, Ill. With the exception of the box proper, it is built entirely of iron and steel, making it lighter by two or three hundred pounds than the usual wooden car. The height of the car over all has been reduced for easy



The Austin Dump Car.

loading. The sideboard is so adjusted that it can be thrown over to the further side of the box, making it possible to load heavy material without lifting it over the top of the sideboard.

In dumping, the sideboard is automatically raised or lowered by roller bearings, which are placed very close to the end of the arm, thereby producing an increased leverage to assist in dumping the car, while the position of the door when open is such that it helps to counterbalance the weight of the box and aids in restoring it to its normal position as soon as emptied. One man can handle the car when loaded. The box attains an angle of 48 degrees in dumping.

The use of pivoted instead of rigid bumpers reduces the liability of the car jumping the track at curves. The axle bearings are placed inside of the

wheels instead of outside, to avoid the filling of the boxes with sand and dirt when dumping. Perhaps the most noticeable feature of the construction of the car is the absence of all complicated mechanism.

Railroad Laws in New Jersey.

The Legislature of New Jersey, recently adjourned, passed only three general laws affecting railroads and street railroads, though a number of railroad bills of a radical nature were presented and discussed.

Senate bill No. 103 extends for two years the time in which new railroads may be finished; but it applies only to roads on which something has been done since Jan. 1, 1886. To take advantage of this law a company must waive all rights of exemption from taxes and agree to obey all general laws.

Assembly bill No. 171 is a supplement to the law of 1895 regulating crossings (not within cities) of steam railroads by new steam or electric railroads. Where a railroad lies in a street a new road desiring to cross it shall have power to alter the grade of such street in the mode defined and directed by the Chancellor, but the company making the crossing must pay the damages sustained by abutters. If it is impossible to agree with property owners as to the amount of damages the Chancellor will appoint commissioners to assess the damages.

Senate bill No. 158 amends the law of last year authorizing chosen freeholders to permit the construction of street railroads in highways. The board of chosen freeholders of a county may widen, straighten or change the location of a highway and may buy land necessary for such purposes. If the board cannot agree with the land owner as to price the court may appoint three commissioners who shall, if practicable, assess the damages.

Massachusetts Railroad Commissioners on Street Railroads.

The main part of the 30th annual report of the Massachusetts State Railroad Commissioners was summarized in the Railroad Gazette of Feb. 24. The part relating to street railroads has now been issued.

Ten new companies in the state were organized during the last fiscal year under the general law and four companies were chartered by special act. At the end of the year, 79 out of 103 reporting companies were working their roads. The railroads of 13 companies were operated by other companies under lease or contract, six companies had organized and paid in a portion of their capital stock, but had not completed their railroads, and five companies had been consolidated with other companies during the year.

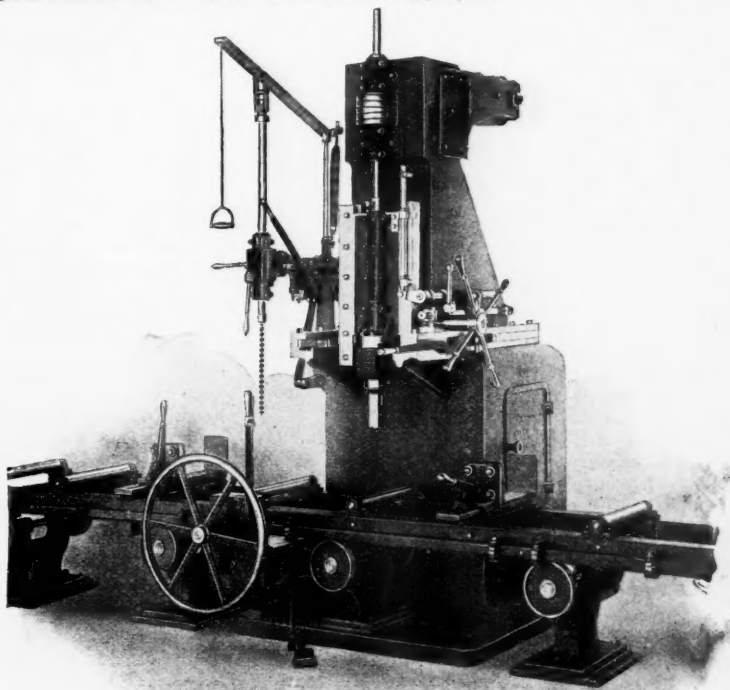
There was added in 1898, 123 miles of single track, one mile of second main track and 3.7 miles of side track, making a total addition of 127.7 miles of single

track. The principal statistics given in the report are contained in the following summary:

	1898.	1897.
Miles of line	1,329	1,206
Miles of main track	1,538	1,414
Passengers carried	330,890,000	308,684,000
Passengers, av. per round trip	43	47
Capital stock	\$38,933,917	\$32,670,273
Funded debt and mortgages	29,132,700	28,049,700
Unfunded debt	7,823,008	5,805,541
Gross earnings, rentals, etc.	18,247,238	15,898,839
Operating expenses	11,692,731	10,904,040
Net earnings	5,242,674	4,911,227
Taxes	854,802	592,454
Rentals paid	1,279,515	128,819
Dividends	2,076,233	1,965,243
Surplus	457,769	627,904
Per cent. of expenses	69.01	68.95
Number of cars	5,734	5,344
Number of other vehicles	1,997	1,953
Number of horses	605	683
Persons killed	38	30
Persons injured	2,175	2,036

In the chapter on the Boston Elevated Railway, the general outline of the plans for building the elevated structure is given, together with the proposed routes of the road.

A brief summary is also given of the work done to the end of last year on the Boston Subway. It is worthy of note that the present estimate of the entire cost is about \$4,250,000, whereas the original estimate was over \$5,000,000.



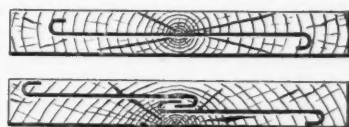
No 8 Vertical Mortising Machine—Made by the S. A. Woods Machine Co.

Referring to the examination of bridges, the Commissioners recommend that the provisions of the act of 1887 relating to the examination of bridges on steam railroads be extended so as to apply to bridges built by street railroads. Prof. Swain, who is bridge and engineering expert of the Board, has offered to undertake as a part of his official work the supervision of street railroad bridges, so that no additional expense would be incurred.

Preventing Checking of Planks.

There is naturally a tendency for air-seasoning planks to open out at the ends—particularly if they are cut from the butt of the tree and more particularly if they have the natural "flare" at the ends. The cracks, once started, extend rapidly through a considerable part of the board; and the more rapid the drying the worse the "checking."

This tendency may be very largely overcome (1) by a heavy coat of white-lead paint, or its equivalent,



lent, closing the tubes (on the end surface only), or (2) by clamps or band-iron, from half an inch to an inch or so wide, nailed on so as to completely encircle the plank-end, or (3) on finished but unpainted unexposed work, such as work-bench tops or drawing-boards, by pasting stout paper over the ends, so as to close the pores.

Recently, in Chemnitz, I saw another method, which seemed quite effective and more easily applied than nailed-on strap-iron. There a lumber yard used shaped pullers of stout band iron driven into the ends of the planks, edgewise, so as to effectually clamp the material, as shown in the accompanying sketch. R. G.

Foreign Railroad Notes

While the Austrian State Railroads were overcrowded with traffic last fall, the Railroad Minister took the bull by the horns, and ordered that only six hours would be allowed for loading and unloading a car, instead of the regular 24 hours. The pressure being over, the old rule was restored Dec. 15.

A circular from the Russian Department of Railroads announces that in the months of September and October last there were 1,474 accidents on the Russian railroads, of which 282 caused death, and 1,182 injuries to persons, and no less than 1,276 of the persons killed and injured were passengers. As there are less than 22,000 miles of the Russian railroads, it is difficult to believe that this is an accurate statement.



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EDITORIAL ANNOUNCEMENTS.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussion of subjects pertaining to all departments of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns our own opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially either for money or in consideration of advertising patronage.

Our records show that during the month of March 21,667 cars of all kinds were ordered and noted in our news columns. Of these 10,075 were gondola, coal and ore cars; 8,960 were box, stock, furniture and refrigerator cars; 575 were flat cars; 1,700 steel cars, and 357 passenger and street railroad cars. One order for about 500 80,000-lb. box cars was noted, and there is a steady increase in the number of large capacity cars ordered. During January and February we noted car orders amounting to 37,027, which, added to the March orders, makes 58,694 cars ordered since Jan. 1, 1899. During the month of March we noted orders for 541 locomotives, of which about 421 were freight; 95 passenger and 25 switching engines. During January and February 666 locomotive orders were noted, making 1,207 engines ordered since Jan. 1, 1899.

As one result of the boiler covering tests made last summer at Clinton, Ia., and reported in our issue of February 17, the Chicago & Northwestern has begun to lag the firebox surfaces of locomotive boilers below the running board. These surfaces are commonly left exposed so that the stay bolts can readily be reached for inspection and repairs; in fact this is the first instance that has come to our notice of lagging these parts. It is the practice of the Northwestern to drill the ends of all stay bolts and to inspect the stay bolts every 30 days, and to avoid removing the lagging for inspecting the covering is cut out in front of each bolt. In lagging the firebox, short pieces of wire are first inserted in the tell-tale holes of the stay bolts after which plastic covering is applied in the usual manner, excepting that possibly more care is taken to have the covering fit the flat surfaces tightly. The covering is then cut away from in front of the stay bolts by a hollow circular punch and the wires removed. Corresponding holes are cut in the jacket which is finally put on, so that the heads of the bolts are always exposed. Above the running board the portion of the jacket in front of the stay bolts is hinged, so that the few upper rows can be reached without difficulty. Some experiments were made during the recent cold weather of lagging the back head of the boiler, which resulted in complaints from the enginemen that the cab was uncomfortably cold. It is thought that the best arrangement for lagging the back head is probably to so attach the covering that a portion sufficient to keep the cab warm can be easily removed in winter and again applied during the summer season.

On another page we print a letter from a superintendent and ex-dispatcher, of skill and experience, concerning the safe-guarding of trains running toward each other on a single track when a meeting point has to be made by telegraph. The letter speaks for itself, and no comment is needed. The

reason for suspending some of the rules, in the case of the collision under discussion was, no doubt, the need of saving as much time as possible. The same general reason was urged upon the committee which prepared the standard code, as may be inferred by the "if" in the rule now under consideration, and similar clauses in other rules. This being the case, the significance of this letter lies in the evidence it gives that an important road has for years used the standard code without taking advantage of the relaxation of safeguards which is provided for in the rule. One reason for speaking of this letter now is to call attention to some present confusion in the numbers of the rules in the standard code. Our correspondent speaks of Rule 521. To find this rule we have to go back to the edition of the code issued in 1895. The present edition has no rule of that number. In 1896 No. 521 was changed to 471. In October, 1898, the Train-Rule Committee recommended a more radical revision, and No. 471 became No. 219; so that when this latest revision shall have been put in use, three superintendents from three different roads might, if they had occasion to discuss it, speak of it by three different names. The last revision of the committee has already been made use of on at least one road, the Delaware & Hudson, whose new code was noticed in the Railroad Gazette of March 31, p. 221. On this road Rule No. 219 becomes No. 87; so that we have a fourth designation for it. And a representative of the Delaware & Hudson has been a prominent and loyal participant in the doings of the association for many years. When it is noted further that the committee recommends that three of the four paragraphs in this rule be omitted entirely, one begins to suspect that rapid progress toward a uniform standard is being made—backwards. Not the least interesting part of the discussion at the October meeting in connection with this rule was the reason given by the committee for this excision. Mr. Sullivan, speaking for the committee, said:

"The Committee thinks it is quite proper, as the development of the science of railroading progresses, to gradually eliminate from the rules, explanations and cautionary paragraphs which at first were considered necessary, and doubtless were necessary; but at the present time, in a well organized and drilled service in the handling of trains, they think it is neither necessary nor desirable that these features of the rules should be retained, and so it has endeavored to condense them down to the essential principles."

Railroads have come to be a considerable factor in the aesthetic life of the country. We do not refer now to the artistic decorations of passenger cars (which have taken the place of the barbaric work of twenty-five years ago) nor to the beauties of rhetoric with which the general passenger agents describe their mountains and rivers, convincing the reader that every mile of their respective roads traverses the Garden of Eden, or an improvement thereon; but to the work actually done by railroad companies in beautifying the earth. Not long ago we had occasion to notice the tree-planting, house-painting and flower-culture schemes of the Seaboard Air Line, in Virginia, North Carolina and other Southern states. To-day we give, on the first page, a brief sketch of the landscape gardening which has been a characteristic feature of the Boston & Albany for a dozen years or more. This road has probably beautified a larger percentage of its stations than any other. It will be observed that our correspondent says that the shrubbery on the Boston & Albany undergoes practically no trimming whatever. To one who has noticed the neat and attractive appearance of the station grounds on the line this statement may seem somewhat surprising, and it should be slightly modified. The gardener never trims shrubs to shape, his aim being to make the effect as natural as possible, and like what would be produced by the shrub growing wild under normally favorable conditions; but he does use the knife whenever there is considerable dead wood or the shrub is not in a healthy state, cutting back sufficiently to restore it to its normal condition. As each shrub or tree has its own peculiar manner of growth and appearance, he tries to preserve this as much as possible in its somewhat artificial surroundings, and to produce, as nearly as can be done, the impression that the plant has always been there. A considerable part of the pleasing effect of the appearance of the station grounds is due to judicious transplanting as the shrubs increase in size, so that while there is often the appearance of being massed together, each shrub has really room enough to grow naturally and to spread itself "according to its kind." In the case of cultivated roses, etc., some cutting back is, of course, done to make them bloom

more freely, but in a broad and general sense it is quite true that the shrubs are never trimmed. (And in most cases never watered either.) It should be borne in mind that the ground for all these plants and shrubs is prepared by excavating all worthless and unsuitable material and filling in its place to a depth of from two to three feet with good loam, enriched as may be required with well-rotted manure or compost. This makes a marked difference in the quality and quantity of growth of even a pasture shrub. Usually we see these under circumstances as far removed in the other direction from the natural and normal conditions of their well-being.

The Engineers of Maintenance of Way.

The preliminary organization of the Association of Maintenance of Way Engineers was made in Chicago, Oct. 21 last. The permanent organization was completed Thursday of last week at Buffalo. The officers then elected and the main points of the constitution adopted appear elsewhere in this issue, but for the convenience of the indolent reader we will repeat here that the constitution admits to membership any engineer who has had five years' actual experience in building or keeping up railroad track, and any railroad officer who is responsible for maintenance of way down to include the grade of division officers. The constitution does not admit supplymen. It will be observed that a man need not have the title of engineer to get in, but he must have had certain responsibilities connected with track work. Those who wish to join the Association for their own purposes or to help along a good movement, can easily do so by addressing the Secretary, who will start them on the proper course.

The purpose in organizing this new society has been to make it a serious technical body devoted especially to a very important branch of railroad engineering, and to keep it as much apart from and above the influences of trade as are the great engineering societies. It is the hope and the purpose of the gentlemen who have organized the society that it shall take rank with the Master Car Builders' Association and the Master Mechanics' Association, and do for the railroads in its field what those fine associations have done in their field. The purpose is to work as they do through committees, having occasional meetings for discussion of and action upon the reports presented by these committees. The Association will, at some points, touch closely the work of the Association of Superintendents of Bridges and Buildings, although the two associations need not in any way interfere. It will come still closer to the work of the Roadmasters, but from the limits of membership it is evident that the new society will not take the place of the old ones.

If we measure the importance of the work of the various engineering officers of the railroads by the money which they spend and by the number of men whom they control or directly affect, the civil engineering course is more important than the mechanical engineering. The latest available statistics of the Interstate Commerce Commission are for the year ending June 30, 1896. There we find that the money spent in maintenance of way and structures was .60½ million dollars, or 20.75 per cent. of all the operating expenses. The money spent in maintenance of equipment was 133½ million dollars, or 17.26 per cent. of the operating expenses. The men employed on the track were just over 200,000, and to these we might add 38,846 carpenters. The machinists and other shopmen were 124,885, and to these might perhaps be added 72,613 enginemen and firemen.

When we look at these figures it seems remarkable that the officers charged with the great civil engineering interests of the railroads have not been organized into a society. This has been partly, perhaps, because the civil engineers are members of the American Society of Civil Engineers and other engineering societies, and look to them for investigation and discussion of special topics. But in such societies railroad civil engineering has only been incidental, and it is difficult to get committees appointed for special study. We all know the grand work done by the committee of the American Society of Civil Engineers on the standard rail section. This may properly be compared with the work of the Master Car Builders' Association on the automatic coupler and the air brake; but an effort to have a similar study made of the rail joint has so far been entirely unsuccessful in the American Society. Yet the rail joint as an engineering problem is knotty, obscure and heavily loaded with variables. A good deal of experimental data could be made available if it were compiled and digested,

but to-day the man who wishes to investigate this difficult problem has to begin for himself at the bottom. Furthermore, accurate experiments under carefully arranged conditions must be made and collated before we can even settle down to a type of joint, to say nothing of details. The question of long rails is another one to be worked out. It has long seemed probable that a great part of the rail joint cost and trouble will be saved by using long rails; yet they are going into track very slowly, and there are many engineers of maintenance of way who do not believe in their utility.

These are only two of the obvious subjects which the new society may attack with profit. There are enough others to keep the committees busy for a good while, and judging from the amounts of money spent every year on maintenance of way, this society has before it the possibility of a great and valuable work, which would consist partly in the gradual evolution of standards, but still more in making available for each member the experience and wisdom of all of the other members.

The last issue of the general folder of the Chicago, Rock Island & Pacific is an example of an unusually good time-table. It was compiled by Mr. J. McD. Stafford, City Passenger and Ticket Agent of the road at Peoria, and embodies some features not usually found in such documents. The "folder" is in book form. When folded it is about the usual size, 4 in. x 9 in., but on opening it one finds that it is a book, with pages 8 in. x 9 in., which when opened in the middle discloses a sheet 9 in. x 16 in., which gives room for a good map of the United States. There is another map of the Rock Island lines on a larger scale. The first thing in the folder is a group of notes telling the inexperienced reader how to use the time-tables, and this is followed by an alphabetical index of stations showing the number of the time-table in which each station can be found. Two half pages are filled with names of officers of the road, including all the general officers, all the traveling freight and passenger agents, and, in fact, all agents except those at stations. The "general information" tells of standard time, describes different classes of tickets in considerable detail and gives information concerning bicycles, baby carriages, mixed trains, freight trains, baggage, children's fares and rates on corpses. It may possibly occur to some children, when they read this folder, that they would prefer not to be sandwiched in between baggage and corpses. A list is given showing each piece of the Rock Island road which is used by the trains of other companies, and also of places where the Rock Island trains use the tracks of other roads. It would add to the usefulness of this list if the length of each piece of road were given. In the condensed through time-tables the stars and daggers used to indicate whether or not trains run on Sunday are shown against each station and not merely at the beginning of the column. In all the tables, throughout the folder, the columns on the right hand side are to be read up. Distances are given in both directions. The complete equipment of trains, including baggage cars, is given for every time-table, including the short branches. Three half pages are given to special schedules of Pullman tourist cars, with rates. As these tables give the day of the week it makes the information about these cars more prominent than that about Pullman standard sleeping cars, which latter occupies only half a page, farther along, near the end of the book. But there is, of course, full information about standard sleepers in connection with each time-table.

A bill has been presented in the Legislature of Illinois to give railroads a lien for demurrage charges on bulk freight which is not unloaded by the consignee within 48 hours after noon of the next day after a car is placed for unloading. According to the "American Lumberman," this bill has been drawn up because the Cleveland, Cincinnati, Chicago & St. Louis lost a lawsuit, in which it tried to collect demurrage on a car of lumber at Danville, Ill., about two years ago. It appears that in the case in which the suit was brought there was no demurrage clause in the bill of lading, so that, in the absence of a statute, the court decided that the carrier had no lien on the goods. The railroad showed that the consignee knew that demurrage regulations were in force, but the judge declared that this was not sufficient. Even if a consignee pays demurrage a few times that does not warrant the railroad in claiming a contract for a future case in which the consignee may think the railroad unreasonable in its exactions. In this case (C., C. & St. L. vs. Lamm; Illinois Appellate Court, November term; opinion by Justice Harker) the lumber was nearly all unloaded before the third day; in the forenoon of that day a bill for one dollar was presented, and, payment being refused, the car was locked. The consignee claimed that the muddy condition of the railroad yard prevented him from finishing the unloading within two days. The "American Lumberman" repeats its former arguments on the general subject of demurrage;

lumber dealers are willing to pay what they deem a fair charge, but think that 48 hours' free time is too short; and if demurrage is to be strictly collected they want railroads to pay a forfeit when lumber is not promptly transported.

After this week the "ordinary" sleeping cars now running on the Baltimore & Ohio will be taken off, and passengers desiring to use sleeping cars will have to pay the regular rates, as formerly. It is given out that to the railroad company the results of this brief experiment were very gratifying, but that the Pullman Company was not in a position to furnish the low-price sleeping cars to all of the roads which are running first-class Pullmans between the East and the West; hence, to reduce friction, the Baltimore & Ohio had to take them off. No doubt it might have been truthfully added that not all of the railroads were "in a position" to run reduced-rate sleeping cars, even if the Pullman Company had been in a position to furnish them. Most or all of the competitors of the Baltimore & Ohio are settled in the opinion that two classes of sleeping cars are not needed, and that the introduction of a second grade would result in no permanent advantage either to the railroads or the passengers. This being so, their "position" must have been such as to produce more friction in passenger-rate conferences than any one road could reduce, except by taking off the cars. If people east of the Mississippi want second-class sleeping cars they will have to demand them with more urgency than has yet been manifested. Meantime the Pullman Company will have to take its forty new "ordinary" cars to the territory west of the Missouri, where, no doubt, it will make money with them.

A committee of the Master Mechanics' Association is to report on the very important subject of the relative merits of cast iron and steel tired wheels. A few years ago this question was discussed with great vivacity, but in recent years it has died down. It will be a matter of much interest to see what the intervening years have developed in the way of experience and opinion. We are prepared to hazard the prediction that the committee will report that chilled cast iron wheels can be produced at a price and of a quality which would put steel tired wheels out of the competition if the question were settled on a square consideration of the merits of the two. We are aware, however, that we take considerable risk in rushing forward to express such an opinion before the committee gathers and submits its evidence. The names of the members of the committee guarantee a substantial report—namely, Messrs. Barr, Hayward and Waitt.

NEW PUBLICATIONS.

Railway Surgery. A Handbook on the Management of Injuries. By Clinton B. Herrick, M. D., New York: Wm. Wood & Co., 1899.

The author states in his preface that "this work is intended merely as a practical handbook to show wherein the injuries ordinarily met with in railway service differ from those incident to other occupations, and to direct special lines in their diagnosis, treatment and management." While the book shows an abiding endeavor to cling to this principle, yet its scientific incompleteness regarding matters of great import to the railroad surgeon is very disappointing. We do not expect a complete review of the subject of dislocations, wounds or even fractures in a book of this compass, but we have a right to expect, for example, a thorough handling of such a subject as traumatic neurasthenia, an affection of extreme interest to the railroad surgeon, and one on which many (including the author) have very hazy notions. The author's endeavor to keep within bounds has led to the elision of some points and the omission of others which would have added materially to the book. Thus, for instance, we find massage and passive motion entirely omitted in the treatment of sprains; skin grafting merely mentioned in the treatment of burns, and shoulder joint dislocations passed over almost without regard to their nature, the Kocher manipulation being given as applicable to all classes of cases, and to the exclusion of all other methods. If a subject is to receive consideration at all within the bounds of a book of this sort, we have a right to expect that no important points regarding it shall be omitted. Entire omissions would seem preferable.

On the other hand, there are a number of good things in the book. The railroad surgeon of the newer sort will find it convenient as something of a guide in the performance of his peculiar duties. After reading the first five chapters he will have a better knowledge of railroad injuries in general and the forces at work in their production. The "emergency packet" idea is a good one. The last four chapters relate to jurisprudence, examination of employees and car sanitation.

The publishers have done their work well. The type is large and clear, the paper and binding good and the cuts well executed.

Business Atlas & Shippers' Guide. Cloth, 20x15 in., 425 pages. Chicago: Rand, McNally & Co., 1899. The 1899 edition of Rand, McNally & Company's Business Atlas and Shippers' Guide contains all the con-

veniences of previous editions and some new features of value. Everyone who has used this atlas knows its great convenience for quickly finding places and railroads. Particular care is given, apparently, to bring down to date the markings of the new railroad lines and to indicate many of the railroads now building. On the margin of each map appears a list of the principal towns, arranged in the order of population, so that at a glance one may see the most important towns and cities on the map. Among the recent additions to the atlas are maps of Cuba, Porto Rico and others of the West Indies, showing among other things the railroad systems of those islands. In the Pacific are found our newly acquired possessions in Hawaii and the Philippines. All these maps are fully up to the standard set by the Rand-McNally people in their other maps.

The Electrician's Electrical Trades Directory and Handbook, 1899. Price 4s. 6d.

The Electrician (London) has issued its trade directory and handbook for 1899, giving biographical sketches of prominent electricians. These sketches have been prepared especially for this directory and are believed to be reliable. The names are not confined to any nationality or to any particular branch of the profession. The sketches are short, and this directory will prove of some interest to electricians, and should have a place in the library of those who have occasion to refer frequently to the career of men well known in the electrical art.

TRADE CATALOGUES.

Compound Locomotives.—No. 11 of the Baldwin "Record of Recent Construction" is a reprint of the St. Louis Railway Club papers on four-cylinder compounds. The reader will probably remember that a little more than a year ago Mr. Richard A. Smart, of Purdue University, presented a paper before the St. Louis Railway Club on the performance of a four-cylinder compound locomotive, giving the results of studies made at Purdue. Last November Mr. Vauclain discussed Mr. Smart's paper before the club, giving further information derived from actual performance in service. Mr. Rhodes and various members of the St. Louis Club took part in the discussion. Much of this material has been published in the Railroad Gazette, but it is now collected complete and in a convenient form in the pamphlet just issued by the Baldwin Works, which, of course, is a very valuable document for those who wish to keep up with the literature of the locomotive engine.

The Detroit Graphite Manufacturing Co., Detroit, Mich., has issued an attractive 106-page, 6x9-in. pamphlet, which shows in a general way to what extent its graphite paints have been used. A brief description is given of the materials used and the methods employed in making these standard paints. As several special paints are also made for use under exceptional circumstances, such as to withstand acids, strong alkalies, high temperatures, or for continued immersion in water, it is suggested that in ordering paint full information be given of the character of the service in which it will be used. An abstract of the specifications of Purdy & Henderson, architects, for painting structural steel are given, together with the results of various tests, while 70 very fine half-tones are shown of buildings, bridges, viaducts, vessels, steel piers, machinery, etc., which have been painted with graphite paint.

The Sargent Co., Chicago, has issued a chart showing the forms of 74 different knuckles for M. C. B. couplers, together with the name of each and the weight when made of cast steel. This company is prepared to furnish any of these knuckles to replace those worn or broken in service, but it does not make parts to replace complete couplers. It is expected that this chart will be useful in identifying broken knuckles as it is often difficult to get new knuckles for replacement, because there are no marks whereby the broken parts can be identified. The chart is interesting as showing the wide variation in the knuckles of different couplers and incidentally it may have the effect of hastening the movement toward the adoption of a few standard knuckles.

Signaling and Interlocking.—The Standard Railroad Signal Co., has issued a new catalogue of railroad signaling and interlocking apparatus. The book is intended to show such devices as the company has made and installed during the last two or three years. The devices shown are numbered, lettered and listed in a convenient way for reference and for ordering. The volume includes interlocking machines of the Saxby & Farmer, and the Stevens types, modified, of course, to the most modern practice. It includes also signals for interlocking and for block signaling, and a great variety of special apparatus and fittings necessary in modern installations. The volume is very convenient in make-up and size and excellently printed.

The Burlington road (Chicago, Burlington & Quincy) has issued a handsome little pamphlet of a dozen pages, telling "How the Greyhounds of the

Burlington Beat the Rising Moon. It is a description, by Mr. W. B. Hunter, of a ride on the engine of the fast mail on one of its recent record-breaking night trips from Chicago to Council Bluffs. Mr. Hunter has a finer fancy than most writers who ride on engines at night for the purpose of telling how much the sights and sounds resemble those of the infernal regions, and his sketch will please his readers.

The passenger department of the Burlington has also issued a 75-page description of the attractions of California, which contains a good variety of pictures, with carefully prepared text which seems to be entirely new. The text is by James W. Steele.

Electric Traveling Cranes.—We have received from the Shaw Electric Crane Co., Muskegon, Mich., an interesting catalogue of electric traveling cranes. A short treatise on the engineering of electric cranes is given, with descriptions of various special apparatus. This is followed by numerous illustrations, with brief descriptions, of cranes running from five tons capacity up to 80 tons. These are shown as installed in foundries, machine shops, locomotive works, arsenals and ship yards. The catalogue is quite worth filing for its technical information. Messrs. Manning, Maxwell & Moore, of New York, are the sole sales agents.

The Corning Brake Shoe Company, Corning, N. Y., has issued a 6 by 9 in. pamphlet, in which the desirable qualities of brake shoes are discussed as well as the characteristics of different metals when used for brake shoes. The effect of brake shoes on steel tired wheels is especially considered. The construction of the Corning brake shoe is described and illustrated, and the results of the laboratory tests recently made at Purdue University on the M. C. B. brake shoe testing machine are given, together with the results of service tests.

The American Rail Joint & Manufacturing Co., Cleveland, O., sends a 9x4-in., 72-page catalogue descriptive of its rail joints. Line drawings are reproduced which show the application of the American rail joint to all the rail sections rolled by the Pennsylvania Steel Co., Illinois Steel Co., Lorain Steel Co., Carnegie Steel Co. and Cambria Steel Co. The cuts of the rail sections are one-fourth size, and the weight and general dimensions are given, together with the reference members of the sections.

The Ingersoll-Sergeant Drill Co., 26 Cortlandt street, New York City, have just issued pamphlet No. 153, to serve as an index to Catalogue No. 41 of the company. The index contains several cuts of drills and other machinery for mining, quarrying, etc.

New York, New Haven & Hartford Dock at New London Conn.

By E. M. Smith, C. E.

Owing to the demand for greater facilities of transportation on the Sound, the New York, New Haven & Hartford Railroad is now building a dock 500 ft. long by 100 ft. wide at New London, Conn. It is on the site of the old Shore Line wharf, which was less than one-half as large as the one now building under the direction of Mr. T. A. Scott, local contractor. The dock has been made to carry the passenger and freight trains meeting the boats of the Norwich, Stonington and Fall River lines. Two tracks, 26 ft. centers will be under cover for 376 ft. on the dock. The work consists principally of arranging bents, building platforms and covered shed, and dredging the channel.

The bents comprise those near shore, which are right angled in relation to center line of dock and those in the channel which are skewed 120 degrees in the direction of true tide. The dock takes the same general direction as the harbor, which runs north and south, but has a bearing in outward direction of S. 3°, 20' E. The bents are spaced along the center line with ten feet centers. Where the dock is rectangular in shape, the bents consist of 23 bearing piles and two fender piles; but from this point toward shore, a distance of 245 ft. on the west side and 100 ft. on the east, the dock flares gradually to a maximum width of 171 ft. at sea wall in order to accommodate itself to shape of boats, thus necessitating an increase of 37 piles in bent along sea wall. All the bearing piles are of chestnut and vary in length from 36 to 60 ft., and in diameter of their butts from 12 in. to 20 in. Their tips are all 8 in. in diameter and sharpened. The piles are laterally spaced 5 ft. center to center, except under tracks, where the spacing is only 3 ft. 9 in.

Oak fenders are driven between bents, as well as at their ends; and every 20 ft. of the sides and end high fenders are driven extending 11 ft. above outer platform. Each outer corner of dock has a cluster of 12 high oak fenders tied together with 3-in. wire and braced by a knee.

Throughout the dock there are in all 1,600 piles driven on an average through six feet of black mud, 15 ft. of white sand and then through a softer material to a firm foundation, and finally fetching up with a ½-in. set, using an 8-ft. fall with a hammer

weighing 2,640 lbs. By means of this data and Trautwine's formula,

Extreme load in tons =
Cube root of fall in feet x wt. of hammer x .023.

Last sinking in inches + 1

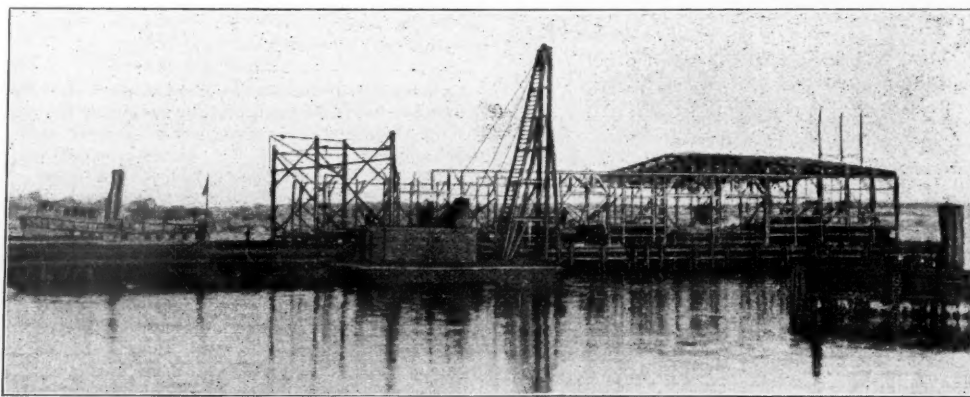
with a safety factor of 2, we find the sustaining load per pile is 40 tons. The piles are cross-braced together in groups of four by 3-in. x 8-in. pieces to low water level, and the skew bents are diagonally braced by 8-in. x 12-in. pieces every 70 ft.

The caps and main timbers of platform are 12 in. x 12 in. Savannah merchantable yellow pine, which constitutes the material of the entire platform.

All intersecting timbers are tied together in turn by square dowels, spike pointed, ½ in. x 24 in., and everything in the way of braces is bolted with ½-in. iron. The entire outer frame of dock and building is subcapped, and 12 in. x 12 in. chocks are used between all fenders.

Each rail of the tracks is supported by two longitudinal 8 in. x 16 in. stringers, with 3-in. spacing, each doweled to intersecting caps, and braced by the 6-in. floor system to the width of tracks.

The flooring of the main platforms is 3 in. in thickness, except that near shore, which is 4 in. There are three platforms, elevated 4 ft. above rail, adjoining the two tracks in building, and the shed is surrounded by a platform having a clearance of 10 ft. This platform is 2 ft. 3 in. above caps, or 8 ft. 9 in. above low tide, and conforms to the dimensions of the City of Worcester of the Norwich Line, and the



New York, New Haven & Hartford Dock at New London, Conn.

Priscilla of the Fall River Line, taken as a standard. The difference between mean high and low tide is 2.62 ft., giving for the top of caps a height of 3 ft. 5 in. above high water, to which level the recent flood tide attained. The dock contains in all 800,000 ft. (board measure) of yellow pine.

The shed is entirely of spruce, being 376 ft. by 80 ft., and having 19 ft. clearance to roof trusses above rail. Each side of the structure has 16 ft. doorways and gangways, with the spacing different on opposite sides.

The roof trusses are of the Warren style, with 8-ft. depth at comb, and spaced every 10 ft. apart, supporting a granite roofing.

With a view to dredging a channel 100 ft. wide, bordering the dock, to the depth of 16 ft. below mean low tide, soundings were taken which showed respectively 4 ft. and 16 ft. of water at each end. Work on this is already well under way, and an old cribbed bulkhead adjoining this new construction has been torn apart by means of a diver and a lighter which removed all piling and thus formed an opening for the dredger to excavate the contents, composed of broken stone.

This dock will be completed about the first of April, and improvements will be made on the adjoining property of the New York, New Haven & Hartford Railroad after the dock has been finished.

Making Railroad Statistics.*

What practical railroad manager has not been devilled by the statistician, annoyed, befuddled, disgusted? Yet the weary grist goes on. 'Way up in the loft of some city office, at the cross roads country station, in the grime and smoke of the store clerk's shack, overhead in the Division Superintendent's office, at the shop clerk's desk and in the Maintenance of Way Department—everybody is making statistics! We have spent one dollar; and we spend two dollars more of the stockholders' money just to explain to them where the first dollar went.

There was the time when the storekeeper needed no cash book, the railroad manager no statistics; but that day has gone, never to return. And a cadaverous, pale-faced race has come among us to parcel out our doings by rules of arithmetic. They prorate our joint earnings, they prorate our joint expenses to divisions and subdivisions, to sections and miles, sometimes almost to rail lengths. They prorate, prorate, everything and everywhere. Indeed, they would prorate the grace of God if they had any.

What is the real place and use of statistics? There is a lack of unity in the statistical work of most roads. Each officer wants peculiar information, perhaps, stated in a uselessly peculiar way. The

*By J. Shirley Eaton, in "The Station Agent." Condensed.

same data is ground over several times to put its results in the form each man's caprice demands.

While some roads have elaborate statistics and others no statistics at all, and yet all continue to operate and prosper regardless of statistics, it may well perplex us to set up any sure basis. Our great system is so vast and complex that the effect of any particular condition or method of operation is lost to view, except of the most skillful and practiced eye. That our profits still go on is gratifying, but if we could have knowledge of how much we have lost that we might have had, our present operation would be shown to be most deplorable, as it really is. What man, who has been trained in the close economies of a poor road, operating in a sparsely settled country, has not been struck with the force of this, as he looked on some more favored road having a dense traffic and stable rates? It is not enough to know that our money was honestly spent; we must know that it was judiciously spent and, even further, that it was most judiciously spent. It is not enough that our earnings are comfortably large, but we should know that they were our full quota, and better, if possible, how much more than our regular quota they were.

Facility with the statistical method comes only with long practice, and is a high order of special talent. In mere economy of clerk hire it would more than repay the enterprising railroad to put all its statistics under one general review. The dead work would fall out, of its own weight. But more than saving of clerk hire would be the advantage of actually useful, practical statistics in the better operation of the property. There is not a road in the country that could not save the costs many times of a live, trained statistician, acting in a supervising and advisory way over all statistics compiled on the road. What freight man to-day knows that he has got every commodity in his territory up to the point of maximum return and least charge? Or what pas-

senger man has available the data to guide him in lowering a particular set of rates or reclassifying his business?

The public are out for statistics. They talk glibly of ton mile, passenger mile, car mile, engine mile. Legislators like to have a statistical basis for support of their proposed "reforms." They will particularly ask us the cost of this and that; the exact cost, the full cost. We have reached dangerous ground. Let our figures be shaded by but so much as a mill or less one way or the other, and we have covered the margin that separates prosperity from bankruptcy. Besides, however carefully and honestly and scientifically a figure is made, its use is beset with rigorous limitations. Look at the good old threadbare absurdity of estimating the switch engine work hour as equal to six (and variously 4 or 8 or 10 or 12 according to the master mechanic's mental constitution) miles of road service in engine costs. Having computed all switch engine expense on this basis, we wonder why our general averages of switch engines are less or more than those of road service. The general average ton mile is an old and particularly mischievous offender. It is time the railroads stamped it as a fraud, for it has proved a most dangerous instrument in the hands of Populist legislatures. It has its place and its use, but we only wish now to emphasize its limitations. Then there is the passenger mile, and it is the chant of every man who has a theory of a better social order. We have no purpose to cast a slur, nor speak in any terms but great respect for the man who thoughtfully and faithfully inquires into the effects and possibilities of a greater and wider passenger movement; but these very reasons will make him most cautious in the free use of the passenger mile as his unit of cost and of service.

Finally, there is the larger field of statistics which the railroad may not ignore. It is the field of inquiries into the trade, industrial and general economic conditions of the territory served, for on this all its value rests. It has long been the fancy of the railroad projector to reckon the stumpage of his forests, in car loads of logs, the output of his mines in loads of crude material, and, as the pioneer road progressed, to extend the estimate to include by rude measure, the output of the larger general industries. But we must go even further and relate present conditions to future possibilities by detail analysis. This must not be a mere computation of barrels of rosin or bolts of cotton cloth, that are or may be; but it involves the nice questions of markets, and the conditions and relative advantages or disadvantages of the competing territories, however remote, that are looking hopefully to the same market. Far too much of railroad operation is a thing of to-day, with no thought of to-morrow. But the men who do not let circumstances overtake them have made the successful properties of to-day.

The statistician on a railroad must have breadth of view, elasticity of mental process, perception, discrimination and judgment, all perfected by a liberal education. He should have a very thorough practical acquaintance with all the detail conditions of railroad operation, its organization, its actual work and men and methods. He should be familiar with all general and public sources of statistics, and be ready in getting out the gist and exposing the fallacy of

all statistical statements. He should be versed in every detail of the Auditor's office, from the use and purpose of the most trivial blank up to the journal entry and the general books.

TECHNICAL.

Manufacturing and Business.

The Gillette-Herzog Mfg. Co., Minneapolis, Minn., has bought the malleable iron business of the Walter A. Wood Harvester Co., and it will be continued under the name of the Minnesota Malleable Iron Works. Temporary offices are in the Manhattan Building, St. Paul.

According to press dispatches the plant of the Lehigh Car Mfg. Co. at Northampton, Pa., will be sold by the sheriff at Easton courthouse, April 8.

The East Side Electric Railroad of Kansas City, Mo., is in the market for some power house equipment. W. O. Hands is General Manager and Purchasing Agent.

The King & Andrews Co., Chicago Heights, Ill., announces that it has provided facilities for making standard cast iron washers in large quantities, also special washers and small castings of all kinds.

Alfred C. Torbet & Co., has opened offices at 1603 Monadnock Block, Chicago. The company is prepared to act as either purchasing or selling agents for contractors, railroads, etc., in buying or selling all kinds of machinery and supplies both new and second-hand. Mr. Torbet was for several years purchasing agent in Chicago for McArthur Bros, general contractors.

The Jerome Metallic Packing Co., of Chicago, reports that its business is constantly increasing, and that its output for the month of March was greater than the output for any other one month since the company began business.

The Chihuahua & Pacific has ordered two track scales of all steel construction from Fairbanks, Morse & Co., of Chicago.

It is stated that an agreement has been signed by which the Shickle, Harrison & Howard Iron Co., of St. Louis, will remove its works to just outside the city limits of East St. Louis, the company agreeing to put up a building to cost not less than \$100,000 (to be in operation within a year) and to employ 300 men.

Edward Robinson, proprietor of the Wells Light Mfg. Co., intends sailing for England on the Lucania, April 8. He will be absent about six weeks.

The Standard Pneumatic Tool Co., of Chicago, advises us that on account of the increased demand for its pneumatic tools in the Eastern States and in foreign countries, offices have been opened at 141 Broadway, New York City, where a full line of the company's products will be on exhibition. John D. Hurley will have charge. The company is making extensive alterations to its works and installing a large amount of new machinery.

The Sterlingworth Railway Supply Co. has bought five pieces of property adjoining the present plant, on which new buildings will be put up.

A new factory is being built by J. W. Jackson, of Sharpsville, Pa., in which he will make Jackson self-closing engine oilers. This has been made necessary owing to the increased demand.

Bids were opened March 30 by Chief Quartermaster Lee, U. S. A., at Chicago, for the ice-making and refrigerating plant at Manila. The plans provide for a very large plant, and the following five propositions were received: Fred W. Wolf Co., \$225,014; De La Vergne Refrigerating Machine Co., \$195,162; Theodore O. Vilter, \$205,820; Frick Co., two propositions, one for \$215,613 and one for \$225,352. All bids were forwarded to the War Department for consideration. (Feb. 3, p. 89.)

Iron and Steel.

Press dispatches state that the Carnegie Steel Co. has announced a general advance in wages to all its employees except tonnage and contract men.

It is stated that the Spearman Iron Co., of Sharon, Pa., will lengthen its engine house 30 ft. and will install new machinery.

According to press dispatches a dividend of 50 per cent., payable in scrip to stockholders, was declared at a meeting of the Directors of the Bethlehem Iron Co., held March 29. The scrip will be convertible into stock of the company on May 15. It was decided to hold a special meeting of the stockholders on April 15, at South Bethlehem, when a vote will be taken on the proposition to lease the company to the Bethlehem Steel Co., at a guaranteed rental of 6 per cent. per annum, the stockholders of the Bethlehem Iron Co. to have the privilege to subscribe to the \$15,000,000 of stock of the Steel company at the rate of three shares of new stock for one of the old. Besides this, the stockholders of record are to receive a three-dollar cash dividend.

The plant of the Calumet Iron & Steel Co., at South Chicago, has been acquired by the South Chicago Furnace Co. for about \$374,000. There are about 56 acres of land, and the plant includes a bar iron mill, blast furnace, and five miles of railroad tracks. A force of men is now putting the plant

in shape to begin operation as soon as possible. It is said the blast furnace will go into operation June 1, and that between 1,000 and 1,200 men will be employed. The company is organized for the making of iron and steel, and all but two of the stockholders are Chicago men. The officers are: President, W. L. Brown; Vice-President, D. M. Cummings; Secretary and Treasurer, B. W. Wells.

New Stations and Shops.

As a result of negotiations between the Canadian Pacific and the town of Rat Portage the railroad will spend about \$150,000 in improvements, among which will be a new stone and brick station.

The Columbia & Western will build a new passenger and freight station, as well as an engine house, at Rossland, Canada.

H. J. Camble, a Division Engineer of the Canadian Pacific, has arrived at New Westminster, to superintend the building of a new two-story stone and pressed brick station at that point. R. Marpole, General Superintendent of the Pacific Division, is asking bids for 40,000 yds. of rock filling at the company's Vancouver wharf. Contractor Smith, of Victoria, is calling for tenders for work on the new wharf and warehouse.

Interlocking.

At the request of the Pennsylvania, State Railroad Commissioner Kayler of Ohio has ordered interlocking signals at the crossing of the Toledo, St. Louis & Kansas City, and the Pennsylvania at Delphos.

Ventilation of the Hoosac Tunnel.

The Fitchburg Railroad Co. is about to make some experiments in ventilating the Hoosac Tunnel, and has contracted for an 18-ft. fan, which will be installed at the top of the central shaft and run by electricity. The power will be taken from the North Adams Electric Power Co., about five miles away. It is not expected that this installation will ventilate thoroughly the tunnel, but the experiment will be on a sufficiently large scale to demonstrate whether or not it is desirable to put in a larger fan. Probably the installation will be working by June 1.

Gasoline Engine for Working a Drawbridge.

The Otto Gas Engine Works, of Philadelphia, have installed a No. 6 gasoline engine on the Hackensack drawbridge of the Erie Railroad. This engine, which is operated at 19 h. p., replaces a steam engine which had been in use for a number of years. The cost of hauling water and fuel for the steam engine was the reason for the change to the gasoline engine, which has proved satisfactory and very economical. The advantage of the gasoline engine for this service lies in the fact that it can be started within half a minute and is kept running only when the bridge is to be moved. Consequently there is no fuel used when the bridge is closed. On the other hand, with the steam engine it is necessary to keep up a fire and a steam pressure for 24 hours a day, even if the bridge is moved but twice during that time. The gasoline engine which has been installed runs an air compressor, which starts the wedges.

Tonnage Rating on the Peoria & Eastern.

Mr. J. A. Barnard, General Manager of the Peoria & Eastern Division of the Cleveland, Cincinnati, Chicago & St. Louis, has issued a revised tonnage rating sheet, which went into effect April 1. The changes from the schedule published in our issue of February 17 consist of dividing the road between Ludlow Falls and Lynn, on the First District, into four sections, whereas formerly but one rating was given between those stations. In the same way on the Second District, the road between Moorefield and Crawfordville is divided into two sections, whereas before it was taken as one section only. The through ratings are unchanged. As the preliminary ratings have been used for four months and no important changes found necessary, it would seem to show that the method used of basing the rating upon data from dynamometer tests is quite satisfactory.

Power Brakes for Street Railroads.

The Board of Railroad Commissioners of New York State will make a test of power brakes for street cars next month. Application for permit to compete and equip cars should be received by the Commissioners' electrical expert, Mr. C. F. Barnes, of Albany, N. Y., not later than May 2. Tests will be made of only those brakes which to the Commissioners seem to be practicable. The cars to be furnished for those who wish to compete will be eight-wheel cars with Brill maximum traction trucks fitted with G. E. 1,000 motors with non-suspension. The driving wheels will be 30 in.; length of car body over all 28 ft. The Metropolitan Street Railway Co., of New York City, will furnish cars and space in its car house for fitting them up. These tests will be made in a manner determined by the Board of Railroad Commissioners and the efficiency of the braking system will be determined on the basis of $E = WS \div D$, where E is the efficiency, W the weight of the car, D the distance from the point at which the signal is given and the point of stop, and S the speed at the time of giving the signal. The merits of the brake will be determined on nine different requirements. These will include emergency stop without skidding wheels, simplicity and reliability of the apparatus and the safety devices in case of failure of any part of the braking system. Ap-

plication blanks for those that desire to compete in the tests may be obtained from Mr. Barnes.

THE SCRAP HEAP.

Notes.

The Legislature of Arizona has passed a law exempting from taxation the property and franchises of railroads hereafter constructed for common carriers of freight and passengers, street and electric railroads excepted. The exemption is for ten years from the date of the passage of the law.

The State Board of Assessment of Alabama has finished the valuation of railroad property for the assessment of the taxes of the present year. The total value of railroad property is \$47,109,052, an increase over the preceding year of \$1,487,105. The total valuation of telegraph lines in the State is \$376,771.

In the case of Troxler vs. Southern Railway, the Supreme Court of North Carolina has just rendered a decision holding that if a railroad company fails to equip its cars with automatic couplers, it is negligence per se, and renders the company liable for injury done an employee even if said employee was guilty of contributory negligence. The same court, in the case of Hancock vs. Norfolk & Western, has decided that the fellow-servant act is constitutional, both under the 14th amendment to the Federal Constitution and Article I, section 7, of the Constitution of North Carolina.

The special commission recently appointed by the City Council of Worcester, Mass., has reported on the grade crossing problem of that city, recommending the elevation of the tracks. At the Union station it is recommended that all the railroads raise their tracks 16 ft. This commission, consisting of Rudolph Hering, Desmond Fitzgerald and City Engineer F. A. McClure, thus agrees with its two predecessors, the commissions of 1890 and 1898. The conclusions of the last named commission were reported in the Railroad Gazette of Feb. 3, p. 88.

Westinghouse.

Engineering (London) begins a description of the Westinghouse Electric Works at Pittsburgh with the following sentences: "There is a popular saying in America that 'the name Westinghouse is a guarantee.' It has become an aphorism among engineers the world over, and, whether applied to achievements with steam, compressed air, gas or electricity, it is held to be equally true. It is the summing up of the Westinghouse reputation. Behind it stand results, inventive genius, indomitable enterprise, sound judgment and integrity."

This is very handsomely said, and the best part of it is that it is literally true.

The Detroit Street Railroads.

Mention was made last week of the action of the Michigan Legislature in passing a bill empowering the city of Detroit to buy all the street railroads in that city. The City Council of Detroit has recommended the appointment of three commissioners to buy the street railroads for the city in compliance with the McLeod bill. The commissioners named were Governor Pingree, C. E. Schmidt and Elliott G. Stevenson, but the Mayor of Detroit has vetoed the measure containing the appointments. While not opposed to the municipal ownership of the street railroads, the Mayor is believed to favor a vote of the people on such an important question before proceeding with the purchase.

Long Island Tunnel Measure Defeated.

On Tuesday of this week the Long Island Railroad tunnel bills came up in the Assembly at Albany, and were defeated by a vote of 13 to 24. The first bill permitted the Long Island Railroad after it had depressed its tracks on Atlantic avenue, Brooklyn, to continue to work an electric road under a perpetual franchise on the surface of the street above the depressed tracks. The other bill amended the charter so as to permit the tunneling of the East River by the Long Island Railroad in order to bring its trains from Flatbush avenue, Brooklyn, to Cortlandt and Church streets, in Manhattan. One of the provisions in this bill was that a perpetual franchise should be granted to the railroad company for the tunnel.

A Busy Street Crossing.

In connection with the subject of track elevation of the Chicago, Rock Island & Pacific and Lake Shore roads at Chicago, now under consideration, and to learn the amount of travel across the tracks at Harrison street, just outside the station, the former road recently posted a man at the crossing from 6:45 a. m. to 6:45 p. m. The report of traffic is as follows:

Pedestrians crossing tracks.....	12,445
Teams.....	5,034
Engines crossing street.....	538
Trains arriving and departing daily.....	122

Two watchmen constantly guard the crossing, besides the usual gates. There are no street cars on Harrison street, and accidents are few at this point.

Car Records in New Railroad Building.

The car accountant of a prominent road which is to build considerable new road this year asks the following questions:

1. What record is kept of construction trains? Are daily train reports required from last station or base of supplies to front, and are car movements entered in record?
2. If entered in record, what mileage is reported per car? Do you get actual miles run by each car, or an arbitrary amount as a day's work?
3. How is this handled in statistical accounts, and to what division of road credited?
4. If no daily reports required beyond last regular station what record is kept of merchandise cars and other pay freight cars handled in construction trains previous to opening of track to regular traffic?
5. How do you handle in statistics the mileage of construction material, carloads, hauled in regular trains and same material in full trains to the front?

6. Do you require daily report from stations where material is stored of such cars on hand?
—Equipment Register.

Public Works in Chicago.

The annual budget of Chicago has the following items. Like appropriations in 1898 are given for comparison.

	1898.	1899.
Building Department.....	\$62,302	\$63,352
Bridges and viaducts.....	85,000	100,000
New bridge, Canal St.....		35,000
Street Department.....	916,788	983,500
Water Department.....	291,169	309,601
Sewer Department.....	195,284	175,955
Department of Electricity.....	250,000	347,000

The appropriation for the Water Department provides that \$50,000 be set aside for laying mains for a high-pressure system for fire protection. The Street Department appropriation is divided into separate appropriations for street cleaning, garbage collection and street repairs and the bill also provides how much shall be spent in each ward for each purpose. The totals for all wards are: Garbage disposal, \$450,000; street cleaning, \$300,000; street repairs, \$457,000. It was decided that none of the work of garbage collection, street cleaning or repairing should be let by contract, but only by direct labor to employees. The appropriation is far below the amount needed by the Department of Public Works for garbage disposal, and it is probable that none of the new plans for that work which have been under consideration can be carried out. No new bridges, except the one at Canal St., to be built in conjunction with the Drainage Board, are provided for, and the amount for street cleaning and repairs is also far below the estimates.

The Republic Steel & Iron Co.

Articles of incorporation have been filed in New Jersey for the Republic Steel & Iron Co. The following statement regarding this company has been issued:

It will have \$25,000,000 of 7 per cent. preferred stock and \$30,000,000 of common. It will include 31 iron mills, six blast furnaces, several ore mines in the Lake Superior region and 26,000 acres of ore and coal lands belonging to the Pioneer Mining & Manufacturing Company of Birmingham, Ala. The new company will have a capacity of at least 1,000,000 tons of merchant iron a year, besides a large product of such specialties as nuts, bolts, splice bars, tie plates, turn buckles, spikes, skelps and numerous other articles. The manufacture of those specialties will be one of the chief sources of revenue to the new concern. Among the prominent men in the organization of the company are the following named: Samuel Thomas, President of the Pioneer Company of Birmingham; George D. and Lyman Wick of Youngstown, O.; J. F. Taylor of Youngstown, J. L. Lewellyn of Chicago, Col. T. M. Meysenberg of St. Louis and Charles Ridgely of Springfield. It is probable that the majority of those men will be in the management. The company starts free from indebtedness and will have in its treasury \$6,500,000 of working cash capital. It will also hold in the treasury \$4,500,000 of preferred stock and \$3,000,000 of common for the requirement of other plants. The organization, as it is about to be completed, makes practically a clean sweep of all the iron mills west of Pittsburgh that are not in any other combination.

Electric Railroads in Germany.

United States Consular Agent Ernest L. Harris, at Eisenstock, Germany, says:

I put myself in communication with the proper authorities in the smaller cities, and I learn that a number of electric railroads are either in progress of construction or are being planned. In Meissen, Weimar and Eisenach the roads are being built. I wish to inform our manufacturers of electric appliances that the following cities are planning the immediate construction of electric plants and electric street railroads: Pforzheim, Trier, Ratisbon, Colmar, Jena, Kalserslautern and Worms. There are no doubt other cities that are preparing to do the same thing. The population of those above mentioned runs from 15,000 to 50,000. There are still a number of cities of this size in Germany which have no street railroads of any kind. Here are not only opportunities for American manufacturers of electric appliances, but for our capitalists as well. Why not secure a concession and take the initiative? A number of towns in Saxony—mere villages a few years ago—have grown through the rapid development of industries into important centers. In many cases a single long, narrow street runs through the middle of them. If our manufacturers in this line have no representatives in Germany, it is high time that they should send them.

C. W. Erdman, U. S. Consul at Breslau, reports as follows:

The City of Breslau is about to grant a 24-year charter to the street railroad company, with privilege of putting the same under electric motive power in place of horse power, now used. The reconstruction of the roads must be completed within two years after the contract has been approved. Overhead and underground systems are to be used. The company agrees to take from the city what electric power it may use for the cars. The city is to receive from the company 33 1/3 per cent. of the net receipts. After Dec. 31, 1907, the city and company will share equally in the net profits. At the expiration of this contract the city has the right to take charge of the property of the company.

The horse-car road in Breslau is the Breslauer-Strassen-Eisenbahn.

Opening of Lake Navigation.

Reports from different lake points indicate that the season just opening will be a good one for vessel men. Lake Erie is free of ice, and the steamer City of Detroit, on March 27, started from Detroit for Cleveland on the first trip of the season. At Chicago the package freight business has reached large proportions. In 1897 the merchandise packages received at Chicago by lake amounted to 2,612,637, and in 1898 to 3,551,983, an increase of over 900,000 packages in one year. The freight is mostly for large firms in Chicago. The above amounts received in 1897 and in 1898 were made up in part of the following articles:

	1898.	1897.
Canned goods, packages.....	641,761	510,000
Dry goods, ".....	109,610	83,200
Hardware, ".....	568,184	523,000
Groceries, ".....	595,649	560,000

Totals1,915,200 1,676,200

Vessel men at Chicago expect 4,000,000 packages this season. In 1898 the lake passenger business carried by Chicago passenger steamers was 1,000,000 persons. This year the Goodrich line will control the whale-back steamer Christopher Columbus, which will make the day runs to Milwaukee, the Virginia making the night runs.

The American Steel & Wire Co. has bought the five steamers of the Zenith Transportation Co., of Duluth, for about \$1,000,000, and now has a fleet of 13 vessels. These boats are about 6,000 tons capacity each, and have been built within the last three years. Two other vessels of the Zenith Co., now building at Lorain, have been sold to the Federal Steel Co. On account of the chartering of so many vessels for the iron ore trade a shortage of available vessels for the grain trade is apprehended in some quarters.

Contract has been let for the foundation of a new three-million-bushel steel grain elevator at Superior, to occupy the site of dock No. 1 of the Northwestern Fuel Co. This elevator will be similar to those in Buffalo, of the same type, but with a capacity of 500,000 bushels more. The foundation will require the removal of 70,000 cu. yds. of material and the driving of 30,000 piles.

At Detroit a new dock is being planned by the Detroit Dry Dock Co., to be 550 ft. long. A number of cargo steamers 475 ft. long are already in service, and it is expected the length of new boats will soon reach 500 ft.

Technical Schools.

Washington University, St. Louis.—The \$400,000 additional endowment mentioned in our issue of March 24, p. 215, has now been given, and in addition to the four new buildings noted at the same time, Mr. Samuel Cupples has given a second building, making five new buildings already given. The second building from Mr. Cupples will be used for civil engineering and architecture, the first one given by him for mechanical engineering and electrical engineering. It is quite possible that an endowment for the new school of architecture will be received in the near future. The plan now is to proceed with the work of construction, so that the new buildings will be ready for use in the fall of 1900.

University of Illinois.—In the Department of Architecture the list of thesis subjects includes one on "A Study of Comparative Costs," and of the 12 thesis subjects 9 are on designs of buildings of different kinds. In the Department of Civil Engineering 64 per cent. of the subjects are on cement and concrete, including the following: "Comparison of Gravel and Stone Concrete," "Adhesive Strength of Cement Mortar," "Yield of Hydraulic Cement." Other subjects are: "Train Resistance on Grades and Curves," "Holding Power of Anchor Bolts," "Design of a Train Shed." In the Electrical Engineering Department there are eight thesis subjects, one of which is on "Experimental Studies of Methods for Testing the Magnetic Qualities of Iron and Steel," the other being on experimental studies and tests of apparatus and current. In the Mechanical Engineering Department are the following: "Experiments to Determine the Effect on the Fuel Consumption of Scale Deposits on the Flues of Locomotive Boiler No. 420, I. C. R. R.," "Boiler Tests with Illinois Coals," "Experiments with the Dynamometer Car of the University of Illinois and the Big Four R. R.," "Experiments on the Flow of Steam Through Rectangular Ports," also in this department a post graduate thesis on "Superheated Steam." The two thesis subjects in the Department of Municipal Engineering are on sewerage.

University of Chicago.—The twenty-eighth Convocation was held at Chicago April 1, many degrees and honors being conferred, and the chief address being by Dr. Henry Van Dyke, of New York. President Harper, in his usual quarterly statement, asked for \$3,000,000, for the following purposes:

To secure balance of Mr. Rockefeller's conditional gift, \$1,000,000; for a gymnasium, \$500,000; for a library, \$1,000,000; for a clubhouse for students, \$250,000; for an assembly hall, \$250,000. All of this is needed at once.

University of Minnesota.—Mr. Walter B. Snow, of the B. F. Sturtevant Co., Boston, will lecture before the Engineering Society of the University of Minnesota April 28, on "The Influence of Mechanical Draft upon the Ultimate Efficiency of Steam Boilers." Different types of apparatus and methods of application will be illustrated and described, the factors of primary cost, quantitative efficiency and operating expense discussed and about fifty lantern slides presented.

LOCOMOTIVE BUILDING.

The Schenectady Locomotive Works is building one locomotive for the Sierra of California.

It is reported that the Michigan Central will build about six passenger engines at its Jackson shops.

The Lake Tahoe R. R. & Trans. Co. has ordered two locomotives from the Baldwin Locomotive Works.

H. K. Porter & Co. has received an order to build two locomotives for the Parral & Durango, a road now building in Mexico.

The Copper Range has ordered one locomotive from the Baldwin Locomotive Works. (See Railroad Construction, Feb. 17, p. 131.)

The Virginia & Southwestern has ordered two consolidation locomotives from the Baldwin Locomotive Works. (See Railroad News, March 24, p. 220.)

The Kansas City, Pittsburg & Gulf needs additional locomotives and we understand some will be ordered as soon as the re-organization of the road is perfected.

The Cincinnati, Hamilton & Dayton has ordered 10 locomotives from the Pittsburg Locomotive & Car Works. Of these, two are passenger, three freight and three switching engines.

The locomotives to be ordered by the Cumberland Construction Co. for the Tennessee Central, as stated last week, will be one 10-wheel passenger, one 10-wheel freight and one 6-wheel switcher.

There are unconfirmed reports that the Grand Rapids & Indiana will increase its order for engines, but we have nothing official. We noted a few weeks ago the order of this road for four engines from the Baldwin Locomotive Works.

The Choctaw, Oklahoma & Gulf has ordered 20 locomotives from the Baldwin Locomotive Works. The order includes consolidation, passenger and switching engines, but the details of the specifications are not yet fully agreed upon.

In our issue of March 3 we referred to an order of the Pennsylvania placed with the Baldwin Locomo-

tive Works for 25 engines. We are now advised that the contract calls for 50 locomotives, and that the road will probably build 100 or more at its Altoona shops during the year.

The Baldwin Locomotive Works have received an order to build 20 locomotives for the Great Northern of England. They will be of the mogul type, with 18 in. by 24 in. cylinders, substantially duplicates of the 30 now being built by the same works for the Midland of England.

Last November it was reported that the St. Paul & Duluth would order some locomotives, but the statement was officially denied. It is again stated that the road will order some passenger, freight and switching engines, probably six or eight in all. We have no official information.

The 25 locomotives ordered from the Brooks Locomotive Works by the Laclede Construction Company for the St. Louis & Northern Short Line, referred to in our issue of Feb. 24, will be divided as follows: Six eight-wheel express passenger engines with 18 in. x 26 in. cylinders, 75 in. driving wheels, wagon top type boilers; fireboxes, 108 in. long and 42 in. wide with 302 tubes, 2 in. in diam. and 11 ft. 7 1/4 in. long; and working steam pressure, 200 lbs.; they will weigh in working order 123,000 lbs., with 83,000 lbs. on the driving wheels. Three six-wheel switching engines, with 19 in. x 24 in. cylinders, 54 in. driving wheels; wagon top type boilers; fireboxes, 97 in. long and 33 in. wide, with 240 tubes, 2 in. in diam. and 11 ft. 1 in. long; working steam pressure, 180 lbs.; the engines will weigh, in working order, 118,000 lbs. Sixteen ten-wheel freight engines, with 19 in. x 24 in. cylinders, 56 in. driving wheels; wagon top type boilers; fireboxes, 108 in. long and 33 in. wide, with 275 tubes, 2 in. in diam. and 12 ft. 7 1/4 in. long; and working steam pressure, 180 lbs. The engines are all to be equipped with Brooks Locomotive Works' improved piston valves.

The Canada Atlantic has ordered two compound Atlantic type passenger and eight compound consolidation freight locomotives from the Baldwin Locomotive Works, the former for May 1 and the latter for June delivery. The passenger engines will weigh 142,000 lbs., with 73,000 lbs. on the driving wheels and have 13 in. and 22 in. x 26 in. cylinders, 78 in. driving wheels; straight boilers, 60 in. in diam.; working steam pressure, 200 lbs.; 262 tubes, 2 in. in diam. and 15 ft. long; fireboxes 103 1/2 in. long and 42 1/4 in. wide, of cast steel, and tender capacity, 6,000 gals. of water and seven tons of coal. The freight engines will have cylinders of the same dimensions and will weigh 173,000 lbs., with 156,000 lbs. on the driving wheels, and have 55 in. driving wheels, wagon top type boilers, 60 in. in diam., with 320 iron tubes, 2 in. in diam. and 13 ft. 6 in. long; working steam pressure, 180 lbs.; fireboxes, 120 in. long and 42 in. wide, of cast steel; tender capacity, 4,500 gals. of water and eight tons of coal. Both types of engines will be equipped with Westinghouse brakes, Gould couplers, Hancock inspirators and Detroit lubricators. The passenger engines will have bell-ringers, but no make is specified.

CAR BUILDING.

We understand that the St. Paul & Duluth is asking bids on about 500 box cars.

The Southern has ordered two cars for passenger service from the Jackson & Sharp Co.

The Lorain Steel Co. is about to order 175 cars for July delivery with an option on 175 more.

The Chicago & Northwestern has ordered 300 furniture cars from the Terre Haute Car Mfg. Co.

The Ulster & Delaware is having three cars for passenger service built by the Jackson & Sharp Co.

The Wells & French Co. has an order for one sample box car for the American Steel & Wire Co.

It is reported, but not officially, that the Maine Central will build several hundred cars at its own shops.

The Westmoreland Coal Co. has ordered 100 cars, in addition to the 50 referred to last week, from the Allison Mfg. Co.

The Richmond, Fredericksburg & Potomac has ordered two cars for passenger service from the Jackson & Sharp Co.

We are informed, but not officially, that the Chicago, Rock Island & Pacific will build about 300 more cars at its own shops.

The Swift Refrigerator Transportation Co. has placed an order with the Wells & French Co. for 210 refrigerator cars.

The Dominion Coal Co., of Boston, has ordered 50 steel cars from the Pressed Steel Car Co. They will be of 100,000 lbs. capacity.

The order for cars placed by the Lehigh Valley with the Pressed Steel Car Co., and referred to March 3, has been increased to 1,000.

The Wells-Fargo Express Co. has ordered 10 cars from the American Car & Foundry Co. They will be built at the works of the St. Charles Car Co.

Pullman's Palace Car Co. is building five composite chair cars for the Chicago, Burlington & Quincy, for use on Denver and Omaha trains.

We are reliably, but not officially, informed that the Copper Range has ordered 10 passenger cars from Pullman's Palace Car Co. (Feb. 17, p. 131.)

We understand that the Toledo & Ohio Central is asking bids on 1,000 box cars, but the exact number to be ordered and the date of ordering has not yet been announced.

We are officially informed that the Louisville, Henderson & St. Louis has ordered no cars from the American Car & Foundry Co. and is not in the market for equipment.

We are officially informed that the Cumberland Construction Co. will buy some passenger equipment for the Tennessee Central in addition to the freight cars noted last week.

The Northern Pacific is building a sample stock car, to be 38 ft. long. It has been reported that this road would soon order stock cars, but we are informed that this has not yet been decided.

In our issue of Jan. 27 we stated that the Indiana, Illinois & Iowa was preparing specifications for box and coal cars. It is now reported that the road will shortly give an order for about 200 box cars.

It is reported that Pullman's Palace Car Co. is making preliminary specifications for the passenger cars to be ordered by the Chicago & Alton, reference to which was made in our issue of March 24.

The Chesapeake & Ohio has placed an order with Pullman's Palace Car Co. for 1,000 box cars of 60,000 lbs. capacity, 36 ft. long inside, to be built exactly to the specifications for those ordered last year.

The Rutland has ordered from Pullman's Palace Car Co. 250 of the box cars noted in our issue of March 24. They will be 34 ft. long, of 30 tons capacity, and built from standard specifications of the road. They are for November delivery.

In our issue of March 24 we referred to an order placed by the Huntingdon & Broad Top Mountain R. R. & Coal Co. with the American Car & Foundry Co. for 500 coal cars of 80,000 lbs. capacity. They will be built according to the P. R. R. Standard Class G N cars, and are for June, July and August delivery.

The 60 box cars which the Portland & Rumford Falls has ordered from Pullman's Palace Car Co., as noted last week, will be of 60,000 lbs. capacity. Otherwise the dimensions and equipment will be the standard of the road. One passenger car has also been ordered from Pullman's Palace Car Co. All are for May 1 delivery.

The Chicago Terminal Transfer Co. order, let to the Illinois Car & Equipment Co., is for 200 gondola cars in all. These will be of 80,000 lbs. capacity, 34 ft. long and are for June delivery. Barber trucks, Westinghouse air brakes, Decatur Car Wheel Works wheels, cast-iron brake shoes, iron axles, Kewanee brake beams and Chicago couplers will be used.

The Canada Atlantic will build a large number of box cars at its shops, probably 1,000. The cars will be of 70,000 lbs. capacity, weigh 29,000 lbs. and measure 35 ft. long, 8 ft. 4 in. wide and 7 ft. 8 in. high, and be equipped with iron and steel axles made by the Nova Scotia Steel Co. and the Ontario Rolling Mill Co.; Common Sense and Cloud bolsters, Sterlingworth brakebeams, Westinghouse brakes, Trojan couplers, Dunham door hangers and Security door brackets, McCord journal boxes and journal box lids, double board roofs, springs made by the Canada Switch & Spring Co., of Montreal, diamond trucks and 33-in. cast-iron wheels made by the Montreal Car Wheel Co.

We give below an abstract of the specifications for the 12 chair cars which are now being built by Pullman's Palace Car Co. for the Southern Pacific. The Pullman Company is also building six cars for the Houston & Texas Central, to be similar in every respect to those for the Southern Pacific. They are for August delivery, and will be 60 ft. long over all, 10 ft. 1/4 in. wide over all, and 6 ft. 8 1/2 in. high from top of sill to under plate. They will have Pullman standard under-frames; Pullman standard hammered iron axles; Hodge brake adjusters; National Hollow (automatic head) brake beams; Christie and Diamond S brake shoes; Westinghouse brakes; Janney couplers; Fantasote curtain materials with Forsyth fixtures; Frumveller double coil in connection with Safety system of steam heat; Fletcher steel journal box lids; Pintsch gas light; steel type A platforms; Scarritt seats; Allen No. 9 3/8 in. wheels, and Pullman standard paint, six-wheel trucks, and vestibules.

The Wilmington (N. C.) Street RR. is having six cars built by the Jackson & Sharp Co.

The Manistee, Filer City & Eastlake, of Manistee, Mich., has ordered four cars from the St. Louis Car Co.

The East Side Electric RR., of Kansas City, Mo., is in the market for some new double truck cars. (See Electric Railroad Construction column.)

The Lorain & Cleveland (O.) RR. will need some new cars when the extension now building is finished. (See Electric Railroad Construction column.)

The Bucks County RR., of Doylestown, Pa., has made application to the court through its receiver for authority to buy some new equipment. (See Electric Railroad Construction column.)

The Saratoga Northern RR., Saratoga, N. Y., will ask bids about Sept. 1 for building two open and two closed motor cars, two open and four closed trailer cars and two open and two closed grip cars. (See Electric Railroad Construction column.)

BRIDGE BUILDING.

CEDAR RAPIDS, IA.—Chief Engineer H. F. White of the Burlington, Cedar Rapids & Northern Ry. informs us that the bridges required by straightening the line at Prairie City are, one deck girder, with a span of 100 ft., and two deck girder bridges, each with a span of 40 ft. (Feb. 24, p. 145.)

CHARLOTTETOWN, P. E. I.—The Southern Branch Ry. is to build a bridge across the Hillsborough River on the proposed road to run south from Charlottetown. This bridge was first spoken of last August in our Railroad Construction column.

CHATTANOOGA, TENN.—The Chattanooga Southern RR. bridge over Chattanooga Creek, and now being used by the Belt, and the Western & Atlantic railroads, has been condemned.

FALL CREEK, WIS.—Surveys have been made for several bridges across Fall creek, between Central Ave. and Northwestern Ave. The plans provide for stone bridges, each to be the full width of the street.

FOLSOM, CAL.—A freshet in Alder Creek recently carried away a new bridge. J. C. Boyd, County Engineer, Sacramento, Cal.

GEORGETOWN, D. C.—Sealed proposals for rebuilding pier 4 for the viaduct at Georgetown will be received until April 27 by Lieutenant-Colonel Chas. J. Allen, U. S. A., at the Engineer Office, Washington, D. C.

HARTFORD, CONN.—Morgan G. Bulkeley, 64 Aetna Life Insurance Bldg., President of the Board of Commissioners, Connecticut River Bridge and Highway District, will receive bids until April 15 for

a new bridge over the East Hartford meadows, on the line of Hartford Ave. (March 31, p. 233.)

HAWKESBURY, ONT.—The Ontario Government has been asked to grant funds toward a new bridge over the Ottawa River between Hawkesville and Greenville.

HEMPSTEAD, L. I., N. Y.—The village of Hempstead has made an appropriation for the new bridge over the pond on Greenwich St., near Front.

KANSAS CITY, MO.—The Allen Ave. viaduct, toward which many of the railroads in Kansas City have contributed money, will probably be built this summer. Henry A. Wise, City Engineer. (June 3, 1898, p. 937.)

LANSINGBURGH, N. Y.—The Trustees of the Oakwood Cemetery will probably build a foot bridge over the stream near Eleventh St., Lansingburgh.

LONG ISLAND CITY, L. I., N. Y.—Pres. Baldwin of the Long Island R.R. proposes to use \$1,000,000 of a new bond issue for the abolition of grade crossings.

MARTINEZ, CAL.—The Southern Pacific Ry. Co. will replace the drawbridge over Alhambra Creek with a new steel structure.

MIDDLEBORO, MASS.—The overhead bridge at Center St. crossing will probably be done away with and the street made to pass under the railroad tracks.

NEBRASKA CITY, NEB.—Henderson Bros. of Savannah, Mo., have secured a contract for all flat, pile and combination bridges to be built by Otoe County this year. Wayland & Co. of Washington, Kan., have the contract for all steel. H. R. Cristy, County Engineer. (Feb. 3, p. 90.)

NOVELTY, WASH.—A bridge with a 225-ft. span will be built across the Snoqualmie River at this place. Plans are being prepared by the County Surveyor. Geo. M. Holloway, County Clerk, Seattle.

PROVIDENCE, R. I.—Robert E. Smith, Commissioner of Public Works, will receive bids until April 12 for furnishing and erecting a steel highway bridge over the Moshassuck River at Mill St., Providence. (Feb. 24, p. 146.)

QUEBEC, QUE.—A bridge to connect the mainland with the Island of Orleans by a bridge is being considered.

RANDOLPH, UTAH.—The State Legislature has appropriated \$2,000 for a bridge across Bear Creek on the Kemmerer road, in Rich County.

ROCHESTER, N. Y.—Plans are soon to be prepared for a new bridge across the Genesee River to connect the Ridge roads.

ST. JOHNSBURY, VT.—A petition for a viaduct over the railroad crossing and Passumpsic River at west end of Portland St. has been presented to the State Railroad Commissioners.

SCRANTON, PA.—The Scranton Ry. Co. will build a bridge on Wyoming Ave., on the line of a proposed extension.

SELLERSVILLE, PA.—The county bridge spanning the north branch of the Perkiomen at Sellersville was partly destroyed by high water March 19.

SYRACUSE, N. Y.—The Syracuse, Lakeside & Baldwinsville Ry. Co. has been granted permission by the Railroad Commission to build the bridge over the D., L. & W. tracks at Stile's crossing.

TIFFIN, O.—The Tiffin, Fostoria & Eastern Ry. will build a bridge across Huron River, on the line of a proposed extension to Norwalk, O. A. Kaup, Manager, Tiffin.

TROY, N. Y.—A bridge is proposed to Island Park race track, owned by Fred. Shifferdecker of Albany.

WALLA WALLA, WASH.—The Street Committee has recommended a steel bridge to be placed over Mill Creek on Fourth St., to replace the present wooden structure. C. N. McLean, City Clerk.

WASHINGTON, D. C.—The Pennsylvania RR. Co. it is announced, has decided to elevate its tracks in Washington and to build a new viaduct to the bridge which is to be built across the Potomac.

MEETINGS AND ANNOUNCEMENTS.

Dividends.

Delaware, Lackawanna & Western.—Quarterly, 1 1/4 per cent., payable April 20.

Eel River.—Annual, 1 1/2 per cent., payable April 5.

Evansville & Terre Haute.—Preferred, 2 per cent., payable April 15.

Vermont & Massachusetts.—Annual, 3 per cent., payable April 7.

Metropolitan Street (N. Y.).—Quarterly, 1 1/4 per cent., payable April 15.

South Side Elevated (Chicago).—Quarterly, 1 per cent., payable May 1.

Technical Meetings.

Meetings and conventions of railroad associations and technical societies will be held as follows: American Railway Association.—Will hold its spring meeting at the Hotel Cadillac, Detroit, Mich., on Wednesday, Apr. 12.

American Society of Civil Engineers.—Meets at the house of the Society, 220 West Fifty-seventh street, New York, on the first and third Wednesdays in each month, at 8 p. m.

Association of Engineers of Virginia.—Holds its formal meetings on the third Wednesday of each month from September to May, inclusive, at 710 Terry Building, Roanoke, at 5 p. m.

Boston Society of Civil Engineers.—Meets at 715 Tremont Temple, Boston, on the third Wednesday in each month at 7.30 p. m.

Canadian Society of Civil Engineers.—Meets at its rooms, 112 Mansfield street, Montreal, P. Q., every alternate Thursday at 8 p. m.

Central Railway Club.—Meets at the Hotel Iroquois, Buffalo, N. Y., on the second Friday of January, March, May, September and November, at 2 p. m.

Chicago Electrical Association.—Meets at Room 1737, Monadnock Building, Chicago, on the first and third Fridays of each month at 8 p. m. J. H. Cravath, Secretary.

Civil Engineers' Club of Cleveland.—Meets in the Case Library Building, Cleveland, O., on the second Tuesday in each month at 8 p. m. Semi-monthly meetings are held on the fourth Tuesday of each month.

Civil Engineers' Society of St. Paul.—Meets on the first Monday of each month except June, July, August and September.

Denver Society of Civil Engineers.—Meets at 3 Jacobson Block, Denver, Col., on the second Tuesday of each month, except during July and August.

Engineers' Club of Cincinnati.—Meets at the rooms of the Literary Club, 25 East Eighth street, on the third Tuesday of each month, excepting July and August, at 6.30 p. m.

Engineers' Club of Columbus, (O.).—Meets at 12 1/2 North High street on the first and third Saturdays from September to June.

Engineers' Club of Minneapolis.—Meets in the Public Library Building, Minneapolis, Minn., on the first Thursday in each month.

Engineers' Club of Philadelphia.—Meets at the house of the Club, 1122 Girard street, Philadelphia, on the first and third Saturdays of each month at 8 p. m., except during July and August.

Engineers' Club of St. Louis.—Meets in the Missouri Historical Society Building, corner Sixteenth street and Lucas place, St. Louis, on the first and third Wednesdays in each month.

Engineers' Society of Western New York.—Holds regular meetings on the first Monday in each month, except in the months of July and August, at the Buffalo Library Building.

Engineers' Society of Western Pennsylvania.—Meets at 410 Penn avenue, Pittsburg, Pa., on the third Tuesday in each month at 7.30 p. m.

Locomotive Foremen's Club.—Meets every second Tuesday in the club room of the Correspondence School of Locomotive Engineers and Firemen, 335 Dearborn street, Chicago.

Montana Society of Civil Engineers.—Meets at Helena, Mont., on the third Saturday in each month at 7.30 p. m.

New England Railroad Club.—Meets at Pierce Hall, Copley Square, Boston, Mass., on the second Tuesday of each month.

New York Railroad Club.—Meets at 12 West Thirty-first street, New York City, on the third Thursday in each month at 8 p. m., excepting June, July and August.

Northwest Railway Club.—Meets on the first Tuesday after the second Monday in each month at 8 p. m., the place of meeting alternating between the West Hotel, Minneapolis, and the Ryan Hotel, St. Paul. Northwestern Track and Bridge Association.—Meets at the St. Paul Union Station on the Friday following the second Wednesday of March, June, September and December, at 2.30 p. m.

St. Louis Railway Club.—Holds its regular meeting on the second Friday of each month at 3 p. m.

Southern and Southwestern Railway Club.—Meets at the Kimball House, Atlanta, Ga., on the second Thursday in January, April, August and November.

Technical Society of the Pacific Coast.—Meets at its rooms, in the Academy of Sciences Building, 819 Market street, San Francisco, Cal., on the first Friday in each month, at 8 p. m.

Western Foundrymen's Association.—Meets in the Great Northern Hotel, Chicago, on the third Wednesdays of each month. A. Sorge, Jr., 1533 Marquette Building, Chicago, is Secretary.

Western Society of Engineers.

The Western Society of Engineers has appointed Messrs. Ralph Modjeski, N. O. Whitney, Isham Randolph, T. T. Johnston and B. J. Arnold a committee to arrange for an exhibit at the Paris Exposition of engineering practice in the West. Models of engineering works, relief maps, large photographs and large, carefully prepared plans are desired.

At the meeting Wednesday evening, April 5, Mr. J. C. Quade presented a paper, "The Effect of Different Speeds and Radii of Curves Upon the Inclination of Bicycle Tracks," and Mr. Oscar Sanne a paper entitled "Some Hints on Bridge Designing." The latter was illustrated by the stereopticon.

American Street Railway Association.

Local arrangements at Chicago for the October meeting have been perfected and a general committee will have charge of all matters relating to the meeting. It will be composed of the chairmen of the sub-committees, as follows: M. K. Bowen, banquet; George A. Yuille, finance; J. M. Roach, entertainment; George O. Nagle, halls and hotels; H. M. Sloan, reception and ladies; H. H. Windsor, publicity and information; F. L. Fuller, transportation; James R. Chapman, exhibits; T. C. Penington, representing the administration of the Association. Applications for space are being received, and it is desired that exhibitors indicate the dimensions and kind of space they require. Assignments will be made Sept. 1. (March 24, p. 216.)

American Society of Mechanical Engineers.

The second regular monthly junior meeting of the Society was held at 12 West 31st street on Tuesday evening of this week. The room was crowded and much interest was shown in the lecture and the experiments. The subject discussed was "Compression and Liquefaction of Gases, with Special Reference to the Liquefaction of Air." Mr. A. L. Rice, who gave the address, reviewed in an able manner the work done on liquefaction of gases, referring to the difficulties met and the success already attained. Special reference was made to liquid air and to Mr. Tripler's work along this line. After the address Mr. F. E. Frothingham showed many interesting experiments with liquid air, which was carried into the room in a can. These included experiments with metal after being cooled to the temperature of liquid air, the effects of combustion of carbon and chemicals in the liquid and the freezing of mercury. Probably the most instructive experiment was the liquefaction of air in a toy balloon by no other means than the cold produced by liquid air on the outside of a bulb which was connected by a small tube to the balloon. It was thus shown that cold alone would liquefy air. Mr. Tripler was present and was invited to speak. He showed one or two interesting experiments and referred to the recent statements to the effect that he could produce ten gallons of liquid air by the use of three in his engine. The impression left was that he did not claim to do this without the expenditure of energy other than what was contained in the air used. The next meeting of the junior section will probably be held the first Tuesday in October.

PERSONAL

(For other personal mention see Elections and Appointments.)

—Mr. George L. Otis, a director of the Calumet & Chicago Canal & Dock Co., and for many years President of that company, died at his home in Chicago March 29, aged 55.

—Col. H. S. Haines, of New York City, Vice-President of the Atlantic & Danville, was married on April 4 at Detroit, Mich., to Miss Anna Davies, daughter of Bishop Davies, of Michigan. He expects to return to Detroit in time to attend the meeting of the American Railway Association.

—The Court of Visitation of Kansas, which succeeds the State Board of Railroad Commissioners, has been appointed by the Governor as follows: C. B. Graves of Emporia, Presiding Judge; L. C. Crum of Oswego, and J. G. Postlethwaite of Jewell City. Ex-Judge A. J. Myatt of Wichita was appointed Solicitor.

—Mr. Robert S. Gardiner, President of the Rand-Avery Supply Co., of Boston, died at his home in that city on March 8. Mr. Gardiner had been interested in railroad printing for over thirty years, and was widely known among passenger men. Mr. N. E. Weeks, manager of the Pathfinder Guide, has been elected President of the Rand-Avery Supply Co. in place of Mr. Gardiner.

—Capt. John Poitevent, President of the East Louisiana RR., and head of one of the largest lumber companies in the South, died March 27 at Abita Springs, La. Capt. Poitevent was born in Gainesville, Miss., in 1841, and it was largely through his efforts that the logging road connecting the Pearl-rington Mills with the New Orleans & Northeastern RR. was replaced with a standard gage road, now known as the East Louisiana.

—Mr. Daniel A. Waterman, Treasurer of the Michigan Central Railroad, died at his home in Yonkers, N. Y., last Monday, from the effects of a stroke of apoplexy. For nearly a quarter of a century Mr. Waterman had been in the employ of the Michigan Central, and he was held in high regard by all his associates. Mr. Waterman was born in Sodus, Wayne County, N. Y., on Nov. 21, 1836. He began his railroad service about 1852 as a clerk in the Erie freight office at Dunkirk, and later was in the Michigan Southern Railroad office in Toledo. He served on two or three minor roads, and in 1875 was appointed Auditor of the Michigan Central, with headquarters in Detroit, and he remained there until November, 1892, when he came to New York as Treasurer. Mr. Waterman was a prominent man in the Railroad Branch of the Young Men's Christian Association.

—Mr. Timothy B. Blackstone, who now resigns as President of the Chicago & Alton, was born in Branford, Conn., in 1829. He entered railroad service in 1847 as Rodman on the New York & New Haven. In 1849 Mr. Blackstone became Assistant Engineer of the Vermont Valley; in 1851 Division Engineer of the Illinois Central. In 1856 he became Chief Engineer and in 1861 President of the Joliet & Chicago, now a part of the Chicago & Alton. Three years later he was made President of the Chicago & Alton, which position he has held until now.

Mr. Blackstone quits the service with an enviable reputation. He is recognized as a sound and able man, and an honest man. He has stood stoutly for "conservatism" in railroad management and his policy has been criticised by many; but for 35 years his railroad has never failed to pay good dividends. From March, 1881, to March, 1897, it paid 8 per cent., with the exception of one year, 1886, when it paid 7 per cent. This alone is evidence of a pretty sound policy.

ELECTIONS AND APPOINTMENTS.

Baltimore & Ohio Southwestern.—Michael D. Wild has been elected Secretary, with headquarters at No. 2 Wall street, New York, succeeding Edward Bruce.

Bogue, Phalia & Sunflower River.—At a meeting, held in Greenville, Tenn., of this newly incorporated company, the following officers were elected: President, W. M. Stone; Secretary, W. A. Everman, and Treasurer, D. J. S. Walker. The Directors, including those above mentioned, are: J. D. Smythe, George G. Johnson, Edmund Taylor and R. L. Lee. (See Railroad Construction Column, March 31, p. 235.)

Buffalo, St. Mary's & Southwestern.—The officers of this company are as follows: President, John Byrne, New York; First Vice-President, Henry Marquand, New York; Second Vice-President, B. Frank Hall, St. Mary's, Pa.; Treasurer, Henry N. Gough, New York; Secretary, E. H. Baird, Ridgway, Pa.; General Manager, B. E. Cartwright; General Freight and Passenger Agent, L. P. Snyder; General Superintendent, B. E. Wellendorf, and Auditor and Assistant Treasurer, H. S. Hastings, St. Mary's, Pa.

Chicago & Alton.—President T. B. Blackstone has resigned.

Chicago & Northwestern.—H. S. Reardon, heretofore Superintendent of the Detroit, Toledo & Milwaukee, has been appointed Superintendent of the C. & N. W. William Hutchinson has been appointed Master Mechanic, with headquarters at Winona, Minn., succeeding William McIntosh, resigned.

Chicago, Lake Shore & Eastern.—A. F. Banks is to assume the duties of Traffic Manager of the C., L. S. & E., with headquarters at Chicago, Ill., in addition to those of Traffic Manager of the Elgin, Joliet & Eastern.

Cincinnati Northern.—W. D. Sterns has been appointed Trainmaster of the Michigan Division, with headquarters at Marshall, Mich., succeeding J. P. Waldo, resigned.

Cleveland, Akron & Columbus.—L. M. Schwan, Vice-President of the Lake Erie & Western, has been elected Secretary and Assistant Treasurer, succeeding George A. Morrison, of New York.

Coahuila & Zacatecas.—A. W. Lilliendahl, General Superintendent, has resigned and that office has been abolished.

Colorado & Southern.—John Forster, who was formerly Master Mechanic of the Atchison, Topeka & Santa Fe, has been appointed Superintendent of Motive Power, with headquarters at Denver, Col., succeeding J. S. Turner.

Columbia Southern.—W. H. Moore has been elected Treasurer, succeeding V. C. Brock.

Crystal.—The officers of this company are as follows: President, E. A. Hitchcock; Secretary, E. T. Allen, St. Louis, Mo.; First Vice-President, A. Pitcairn, Pittsburg, Pa.; Second Vice-President, W. L. Clause; Assistant Secretary, C. W. Brown; Chief Engineer, W. D. Hartup; General Traffic Manager, J. M. Belleville; General Superintendent, H. G. Chisnell, and Superintendent, E. Brown, Crystal City, Mo.

Delaware & Hudson Canal.—Assistant Engineer James MacMartin will, until further notice, assume the duties of Chief Engineer, with headquarters at Albany, N. Y., owing to the death of Robert H. Brown.

Delaware, Lackawanna & Western.—W. B. Hixson, formerly with the Minneapolis & St. Louis, has been appointed Superintendent of Bridges and Buildings of the D., L. & W., with headquarters at Hoboken, N. J., succeeding S. Griffith, resigned.

Detroit & Lima Northern.—The headquarters of F. Seymour, Auditor, have been removed from Lima, O., to Detroit, Mich.

Duluth & Iron Range.—Joseph Sellwood, Second Vice-President, has resigned.

Dunkirk, Allegheny Valley & Pittsburgh.—George W. Bartlett has been appointed Superintendent, succeeding Dewitt C. Moon.

Merchants' Despatch.—Mr. Gordon McLeod, formerly General Western Agent of the Merchants' Despatch Transportation Co. at Chicago, has been appointed General Agent of the same company with headquarters at New York. Mr. McLeod will be succeeded by Mr. E. W. Johnson, formerly agent at St. Paul, Minn.

Mexican Central.—The headquarters of E. E. Styner, Superintendent of the San Luis Division, have been removed from San Luis Potosi, Mex., to Cardenas, Mex.

New Orleans & Northwestern.—C. B. Brownell has been appointed Assistant General Manager, succeeding J. M. Barkley, of Natchez, Miss., resigned.

New York Central & Hudson River.—A. T. Hardin has been appointed Acting Division Engineer of the Eastern Division, succeeding Geo. W. Bartlett, transferred.

New York, Chicago & St. Louis.—John H. Clarke has been appointed General Solicitor, and Frank B. Carpenter, Assistant General Solicitor.

North & South Carolina.—Chas. O. Haines, who is General Manager of the Atlantic & Danville, has been appointed Chief Engineer of the N. S. C., with headquarters at Norfolk, Va. (See RR. Construction column.)

Omaha, Kansas City & Eastern.—E. H. Shaufler has been appointed Assistant Superintendent of this company and the Omaha & St. Louis, with headquarters at Quincy, Ill.

Pennsylvania Co.—N. Neff has been appointed Engineer Maintenance of Way of the Indianapolis Division, succeeding W. C. Loree.

Pecos Valley & Northeastern.—J. E. Bowen has been appointed Superintendent and Auditor, with headquarters at Pecos, Tex., succeeding A. M. Stark.

Philadelphia, Wilmington & Baltimore.—Geo. H. Brown has been appointed Supervisor of Division No. 1, succeeding S. L. Shober, Jr. Gamble Latrobe has been appointed Supervisor of Division No. 5, succeeding Geo. H. Brown, transferred. Effective April 1.

Walkill Valley.—J. D. Layng, General Manager, has resigned and that office has been abolished. (See Railroad News Column, March 31, p. 238.)

Wisconsin, Michigan & Northern (successor to the Wisconsin & Michigan).—R. C. Gowen has been appointed Chief Engineer, with headquarters at Chicago, Ill., succeeding A. M. Kinsman, resigned.

RAILROAD CONSTRUCTION,
New Incorporations, Surveys, Etc.

ALABAMA & FLORIDA.—Grading and track laying are completed from Gloria, Ala., to River Falls, 28 miles, on this line from Gloria southeast 75 miles via McKenzie, Brooks, South Red Level, River Falls, Anadulasia to Geneva. R. M. Quigley, of St. Louis, Mo., has the contract. (Jan. 6, p. 15.) E. L. More, of River Falls, is President, and Chas. Seymour, Chief Engineer. (Official.)

ALABAMA & TOMBIGBEE.—Grading is completed from Fulton, Ala., to Flat Creek, seven miles, and track is laid from Fulton to Vickers, six miles, on this line from Fulton, Ala., east to Lower Peach Tree, 14 miles. The company also proposes to build from Fulton to Coffeeville, 23 miles. There are 60 men and four teams at work. The company has contracted for all the rails needed. (Jan. 6, p. 15.) The work is being done by the day under George R. Hannon, of Fulton, General Manager and Purchasing Agent. (Official.)

BALTIMORE & OHIO.—Surveys are reported in progress for a branch up Scholls Run to South Huntingdon Township, Westmoreland Co., Pa.

BRITISH COLUMBIA ROADS.—The following acts were passed at the prorogation of the British Columbia Legislature:

Act No. 6, to incorporate the Kamloops & Atlin Ry. Co.; No. 7, to amend the "North Star & Arrow Lake Ry. Act," 1898; No. 11, to incorporate the "Vancouver, Northern & Yukon" Ry.; No. 15, to incorporate the "South Kootenay" Ry. Co.; No. 16, to incorporate the "Atlin Short Line Ry. & Navigation" Co.; No. 21, to amend the "Kootenay Ry. Act," 1898; No. 29, to amend the "Kootenay & North Western" Ry. Co.'s Act, 1898; No. 33, to amend the "Columbia & Western" Ry. Subsidy Act, 1896; No. 56, to incorporate the "Atlin Southern" Ry. Co.; No. 75, to repeal certain statutes and por-

tions of same granting aid to railways; No. 96, to grant a subsidy to a railroad from Midway to Penticton.

The above, having passed their three readings and received the Royal assent, are now the law of the land. Act No. 75, to repeal certain statutes and portions of statutes granting aid to railroads, was a political move to take the subsidies granted last session to MacKenzie & Mann, in connection with certain imperfect railroad contracts. The contracts were conditional on a supplementary grant being made of \$6,000 a mile of the distance to be covered by the Dominion authorities; this condition, the British Columbia Government contends, vitiated the contract.

BURLINGTON, CEDAR RAPIDS & NORTHERN.—As reported in the issue of March 17 (p. 197), the company has decided to straighten the tracks at Prairie Creek, Ia., requiring about three-fourths of a mile of new track. The quantities to be moved are estimated as follows: Cut from station 5,059 to 5,067, earth 9,500 yds., rock 23,500 yds.; from station 5,046 to 5,051, earth 3,000 yds., rock 1,800 yds.; embankment from station 5,026 to 5,046, 24,700 yds.; from station 5,050 to 5,059, 8,000 yds. Masonry is estimated at \$10,000. The railroad bridge required will have one deck girder span of 100 ft., and two deck girder spans of 40 ft. each. The estimated cost of the entire work is \$35,000. (Official.)

Official statement is that there is no truth in the report that this company will extend its line from Estherville, Ia., north to St. James. (Feb. 10, p. 107.)

CANADA ATLANTIC.—The Ottawa, Arnprior & Perry Sound will at once fill in trestle work at Arnprior, Que.

CANADIAN PACIFIC.—The Columbia & Western line, formerly owned by Mr. Heinze, has a narrow gage branch from Trail, B. C., to Rossland, about 14 miles long, with a rise of an average of 171 ft. per mile. Eight months ago the C. P. R. started to standardize it, the bridging and grading being done by Messrs. Parsons & Boomer, but cold weather set in before they could lay the track. This will now be done by laying a narrow gage rail between the standard rails, allowing trains of both gages to be operated. The company will also make extensions to other mines, besides making improvements in new buildings. All the work is to be finished by the end of May. The Chief Engineer, W. F. Tye, also says that the company will be running trains into Greenwood by June, as about 16 miles of track is also laid from Robson.

Grading and other preliminary work on the company's Robson-Midway line is well in hand. It is proposed to build a branch from Midway to Beaver Flat, on the west fork of the Upper Kettle River. The company has also just made announcement of its intention to build a branch from Midway to the Republic Mining Camp in Washington, 30 miles, and Messrs. D. W. Moore, A. L. Dean and Engineer C. A. Stoess are looking over the ground relative to building a smelter at or near Midway. General Manager Whyte of the western lines says that about \$50,000 will be spent by the C. P. R. this summer in straightening and improving the line between Nelson and Robson, to begin at once with a large force of men. He states also that the time has not been definitely fixed for beginning the Arrow Head branch to the north end of Kootenay Lake, which would be the winter route to South Kootenay, but this will be determined as soon as the surveys now under way are completed. Speaking of Vancouver, he states that the work of filling all the dock and wharfage extensions, as laid out last year, will be continued, including extensions to the company's hotel at Vancouver, costing \$1,200,000.

The Naksup & Slocan branch in British Columbia is to have a large sum of money spent upon it this year filling in cribbings, straightening curves and strengthening bridges. The yard at Nelson, B. C., is being enlarged and improved. W. P. Tierney has a large force of men and teams at work grading the west end, where more side tracks are to be placed, and other improvements made at once. Some changes are also being made in East Kootenay, a siding being put in about two miles up the Kicking Horse from Golden, to accommodate bridge gangs who will replace the present wooden bridges along the Kicking Horse with steel bridges.

CENTRAL NEW ENGLAND.—Work is just begun on the extension from Tariffville, Conn., north 14.35 miles, via East Granby, West Suffield and Feeding Hills, connecting with the Boston & Albany near Springfield, Mass. Ryan & Kelly, of Philadelphia, have the contract. (March 3, p. 161.) About 250 men are at work. (Official.)

CENTRAL OF GEORGIA.—The company, as already noted (Feb. 10, p. 108), proposes to extend the line from Seairight, Ala., southwest via Christine, six miles, to Andalusia, 14 miles. Grading was done several years ago from Seairight to River Falls. It is expected to use the old grading from Seairight as far as Christine, on the west side of the Conecuh River, and thence across the river to Andalusia. Preliminary surveys have been made and engineers are now locating the line. (Official.)

CHESAPEAKE & OHIO.—The West Virginia Pulp & River Co. will build a new pulp mill in Greenbrier, W. Va., according to report, and the C. & O., which runs across the south end of the county, will build a branch railroad connecting the plant.

CHESAPEAKE BEACH.—Grading is practically completed on the entire extension from Marlborough, Md., to the beach on this line from Washington, D. C., east 30 miles, via Upper Marlborough, to Chesapeake Beach, Md. All is ready for rails except some bridging. It is proposed to complete the entire line to Beach Lake in May. Rails were laid last year as far as Marlborough, 12 miles. Otto Mears is President and General Manager, and W. A. Beerbower Chief Engineer, both of Washington, D. C. (Jan. 6, p. 15.) J. Kennedy Todd & Co. are the New York representatives.

CHESTER, PERRYVILLE & STE. GENEVIEVE.—This company has been incorporated in Missouri as successor to the Chester, Perryville, Ste. Genevieve & Farmington, with a capital stock of \$300,000. The incorporators are: Edward Hadden, John W. Fisto, E. F. Blomeyer, L. L. Phillips and Louis B. Houck. The company's office is Perryville. The line extends from Clearville to Perryville, 19.5 miles, and it is stated that an extension is under way northwest along the river to Ste. Genevieve, eight miles, with a further extension proposed to Farmington and the lead district. (Jan. 20, p. 52.)

CHICAGO & WABASH VALLEY.—Ten miles of this road is completed and ten miles more are under construction from Kinnman, Ind., southeast. The work is light. (Sept. 23, 1898, p. 696.) Benj. J. Gifford of Kankakee, Ill., is President. (Official.)

CHICAGO, BURLINGTON & QUINCY.—Surveys are reported in progress for an extension of the Burlington & Missouri River line from Alliance, Neb., south 160 miles via Gering, Harrisburg and Kimball to the company's line at Brush, Col., near Denver. This would give Denver direct connection with the line to Billings, Mont.

CHICAGO GREAT WESTERN.—This company has authorized the expenditure of \$500,000 on improvements on the Oelwein & Des Moines and St. Joseph Division running southwest from Oelwein, Ia. The greater portion is to be used in grading and ballasting the roadbed and in strengthening and repairing bridges.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—Surveys are being made by the recently incorporated Indianapolis & Louisville for the extension from Indianapolis, Ind., southwest about 100 miles to Switz City. (March 24, p. 217.) It is not definitely determined, however, whether the road will be built. (Official.)

CHICAGO, MILWAUKEE & ST. PAUL.—Surveys are reported in progress for the extension of the Fond du Lac line of the Des Moines, Northern & Western from Fond du Lac, Ia., northwest about 50 miles to Spencer. (Jan. 27, p. 72.)

CHICAGO, ROCK ISLAND & PACIFIC.—Surveys have been made for an extension from Tara, Ia., northwest about 100 miles to Sibley. The field notes of the survey have been sent to the headquarters of the company, and the executive committee is considering the advisability of building the extension.

CLEARWATER SHORT LINE.—An amendment of this company was filed at Washington, March 30, making the route of their branch line from a junction with the main line at Grange City, Wash., to run southwest to connect with the Eureka Flat branch of the Washington & Columbia River at Pleasant View, Walla Walla county, about 16 miles. This is a subordinate company of the Northern Pacific. (Jan. 27, p. 72.)

CLEARWATER VALLEY.—Supplemental articles of incorporation were filed at Olympia, Wash., March 30, for the following new lines:

- (1) In the state of Idaho, at the junction of the Clearwater River and the Snake River, thence along the valley of the Clearwater to the south and middle forks thereof to the boundary line of the mouth, near Lolo Pass, with a branch through Canas Prairie, Ida., to Mount Idaho.
- (2) To a point in the state of Oregon, at the mouth of Grande Ronde, to the mouth of the Wallawo River.
- (3) From Baker City, Ore., to the confluence of the Powder and Snake rivers.
- (4) From a point on the Snake River, near the mouth of the Salmon River, to a point on the Powder River.
- (5) From a suitable point on the Snake River, Ore., to the Seven Devils mining region, Ida.
- (6) From a point on the Snake River, near the mouth of the Salmon River, to the head of Salmon River.
- (7) Moscow, Ida., to a point on the Clearwater River.
- (8) From the mouth of the Clearwater River, Ida., down the north bank of the Snake River, thence across the river to Huntington, Ore.
- (9) From a point on the line near Cottonwood and Mt. Idaho, Ida., to the Buffalo Hump mining region, Ida.

This company is a subordinate of the Oregon & Navigation Co., and a portion of the above is already building.

COLUMBIA SOUTHERN.—Surveys were to be begun April 1 on the extension from Moro, Ore., south 30 miles to Antelope. The ultimate point of extension is Prineville, 95 miles south of Moro. The road was completed from Biggs to Moro, 28 miles, last year. (Feb. 10, p. 108.) E. E. Lytle of Moro is President. (Official.)

COLUMBUS, LIMA & MILWAUKEE.—Grading is completed between Lima, O., and Defiance, 39.96 miles, and track is laid from Continental to Gomer, 18.5 miles, on this proposed line from Columbus, O., via Lima and Defiance to Saugatuck, Mich., 285 miles. Sections under contract are from Lima to Defiance. Andrew Bruon, of Ottawa, O., contractor. J. G. W. Cowles, of Cleveland, O., is President, and C. T. Hobart, of Defiance, Chief Engineer. (March 3, p. 161.) Norton & Tunstall are the New York representatives. (Official.)

DETROIT & MACKINAC.—The President writes that the company has no intention of extending the line to Sheboygan this year. (Dec. 9, 1898, p. 885.)

DOTHAN, HARTFORD & FLORIDA.—This company has been incorporated in Alabama, with a capital stock of \$110,000, to build a line from a point on the Alabama Midland (probably Dothan), to run southwest about 25 miles to Hartford, and thence to some point in Florida. The incorporators are: J. P. Pelham, H. C. Pelham and A. H. Peacock, Dothan, Ala.; W. J. Perkins, W. F. Clement, S. T. Burch and W. M. Jenkins, Hartford.

EEL RIVER & EUREKA.—The work at Eureka, Cal., consists of a switch about two miles running along the river front. A part of the building is completed. Some rights of way have yet to be secured. There will be about 1,000 ft. of tunnel; otherwise the work is reasonably light. (March 10, p. 179.) No contracts are to be let, but the work is being done by the company. (Official.)

GRAND TRUNK.—General Superintendent F. H. McGuigan has supplied us with some very interesting figures showing the reconstruction work done on this road during the past year. Two hundred and fifty-five miles of 80-lb. rails were laid. Over 500 miles of the road were greatly strengthened and improved. Sixty-six miles of new track, and 20 miles of sidings intended for the use of manufacturing establishments were laid. Eighty-five light iron and steel and wooden bridges were replaced by new steel structures of the best and most modern description, their total length being 21,236 feet or over four miles. The number of running feet embraced in this achievement includes the 25 spans or 6,592 feet of the Victoria Bridge at Montreal, but does not include the splendid single span steel structure crossing the Niagara gorge. Other bridges were likewise looked after, and the Grand Trunk record for 1898 also shows that 35 wooden pile bridges and trestles possessing a total length of 2,361 feet, as well as 10

wooden overhead wagon bridges, the whole being 1,108 feet long, were completely rebuilt, most of these being on the branch lines. The Grand Trunk laid during 1898 no less than 1,759,833 cross ties, an increase over 1897 of 500,000. Three hundred and twelve miles of ballasting has also been done, 262 miles having been done with gravel and the remaining 50 with cinders. The latter is considered excellent material where the line passes over wet land, or where drainage is very difficult. Sixty-one wooden-stone and pipe culverts were renewed in stone during the year, and fine new buildings too numerous to mention went up all along the lines. Sixteen stations, eight freight sheds, two coal chutes, and 12 motive power buildings were erected; while 60 stations, nine freight sheds and nine motive power structures were remodelled, painted and repaired during the same time. Eleven of the 16 new stations were built in Ontario and Quebec, one in Maine, and five in Michigan.

GREAT NORTHERN.—At a meeting of officials of this company, held in Vancouver, B. C., recently, maps of the section between Vancouver and New Westminster were gone over and the question of building a line between the two cities from the south side of the Fraser River was thoroughly discussed.

GULF & SHIP ISLAND.—Mississippi press dispatches state that the Columbia, Lumberton & Gulf line will be extended from Lumberton, Miss., northwest about 30 miles to Columbia, and that preparations for the work are under way.

HAWAII ROADS.—A press dispatch from Honolulu states that a new railroad is building in the Island of Hawaii from Hilo, on the east side, to run south into the Puna District and eventually to encircle the island.

HOLSTON VALLEY.—Grading is reported in progress for the extension from Big Creek Park, Tenn., east 15 miles to Shady Valley, in Johnson County. The line now runs from Bristol, Tenn., to Big Creek Park, nine miles. (Jan. 13, p. 33.)

ILLINOIS CENTRAL.—This company, according to report, will build a short line from Lyle, Ia., on the boundary line of Minnesota, to run northwest about 30 miles to Albert Lea, Minn., connecting with the Minneapolis & St. Paul.

IOWA CENTRAL.—Balch & Peppard, of Minneapolis, have the contract for the Iowa Central & Western extension from Belmond, Ia., northwest 28 miles to Algona. Grading is to be begun as soon as the weather permits and the road completed by Oct. 1.

LAKE SHORE & MICHIGAN SOUTHERN.—Two branches of the New York, Chicago & St. Louis line, according to report, are being built from Lorain, O., one northwest to Oak Point and the other southwest connecting with the main line at North Amherst.

LONG ISLAND.—Track is being laid by the railroad company on the incline plane in Brooklyn from the Atlantic Ave. line to the tracks of the Brooklyn Elevated at Flatbush and Atlantic Aves. (Jan. 27, p. 73.) Crawford & Co., of Brooklyn, have the foundations; Pencoyd & Co., the superstructure, and the Terry & Trench Construction Co., the deck. The line will be ready for operation April 15. (Official.)

MARSHALLTOWN & DAKOTA.—Surveys were to be begun this week for the proposed line from Story City, Ia., on the Iowa Central branch from Marshalltown, to run northwest via Fraser and into South Dakota. The company was organized recently, with a capital stock of \$2,000,000, and it is stated that the Iowa Central is back of the project. Hamilton Browne, of Boone, Ia., is President; J. T. Wright, Chicago, Vice-President, and S. T. Meservey, of Fort Dodge, Ia., Secretary and Treasurer. (March 24, p. 217.)

MEXICAN CENTRAL.—The old Michocan & Pacific, now known as the Yurecuaro extension proposed from Yurecuaro, Mex., southeast, is located to Tinguindin, 120 km. (75 miles), running via Zamora, Ario and Chavinda. The line is graded nearly to Zamora, 43 km. (27 miles), and there is about 20 km. of track laid. It is expected to reach Zamora by June 1, and to complete the line a year later. The rail used is 56-lb., with stone ballast, iron bridges and stone culverts. (Nov. 4, 1898, p. 804.)

The contemplated line from Guadalajara, Mex., south via Zapotlan and Colima to Manzanillo on the Pacific is under survey (Jan. 6, p. 15), but it is not probable that building will be begun before the latter part of this year. (Official.)

MISCELLANEOUS COMPANIES.—The Boston & Lake Superior Copper Co. was incorporated in Arizona March 21, with a capital stock of \$500,000, to mine ore, build railroads, etc. The incorporators are: C. S. Starkweather, D. C. Cooke, Superior, Wis., and C. A. Hall, Boston.

MISSOURI, KANSAS & TEXAS.—The line, according to report, that is to be built from Dolan, Ind. Ter., to the Bassett Mines, about five miles, is being built by the St. Louis-Galveston Coal & Mining Co., of St. Louis, Mo. It will intersect the M., K. & T. at Midway, Ind. Ter., and will be about three miles. It traverses the prairie country, making light grades and requiring only two or three miles of trestles. The ties are on the ground, but the rails are not received. There is no direct corporate connection with the M., K. & T. (Feb. 3, p. 93.)

NATCHEZ, COLUMBIA & MOBILE.—Grading is completed for two miles and track laid for 1½ miles on this company's line from Sausbury, Miss., northeast 11½ miles to Pearl River. There are 18 men and 10 teams at work. (Jan. 6, p. 16.) C. S. Butterfield, of Norfolk, Miss., is General Manager. (Official.)

NAZARETH & LEHIGH.—This company, whose incorporation on March 17, with a capital stock of \$10,000 was noted in the Electric Railroad Construction column last week, is to build a steam road from Nazareth, Pa., on the Bangor & Portland, to cement works near Christian Springs. Grading is to be begun soon. C. Miller is President; John A. Miller, Vice-President; G. W. Mackay, Secretary, and Mark T. Swartz, Treasurer. The general office is Bangor, Pa. (Official.)

NEVADA-CALIFORNIA-OREGON.—The General Manager writes that his company is not building any extension from Amadee, Cal., west to Susanville, nor is it likely to do so. (March 24, p. 197.)

NEWFOUNDLAND.—The only line now building by this company is from a point on the main line

west nine miles to St. Johns. (July 1, 1898, p. 455.) Robt. G. Reid, of St. John, is lessee. (Official.)

NEW YORK CENTRAL & HUDSON RIVER.—The company is doing some ordinary renewing of rails between Albany, New York and Buffalo, but the majority of this class of work consists in the relaying of the rail between Poughkeepsie and Albany, about 68 miles of double track, with 80-lb. rail.

NORTH AND SOUTH CAROLINA.—Bids are asked for the first 20 miles from Virgilina, Va., south on this proposed line from Virgilina on the Atlantic & Danville, south to Columbia, S. C. Col. H. S. Haines, of 66 Pine St., New York, is President of this company, and also Vice-President of the Atlantic & Danville. (March 31, p. 236.)

NORTHERN PACIFIC.—Surveys are reported in progress for a cut-off near Seattle on the main line from Palmer, Wash., to run west 20 miles to Kent, which will effect a saving of some 27 miles in the line to Seattle. President Mellen is reported as stating that the board of directors have authorized the building of this cut-off, and that grading is to be begun as soon as surveys are completed, and the line made ready for trains before the end of the year.

The Cooperstown Branch will be extended northwest and west 25 miles. (March 24, p. 217.) The company expects to complete the line during the present season. The work is of the ordinary prairie character, without important bridges or trestles. (Official.)

ONTARIO & RAINY RIVER.—The Ontario Government has granted this company a cash subsidy of \$1,000 per mile from its junction with the Port Arthur, Duluth & Western to Fort Francis, 205 miles, and \$4,000 a mile from Fort Francis to the mouth of the Rainy River, 75 miles, a total of \$505,000. This line is being built by MacKenzie & Mann under a Dominion charter from Port Arthur, Ont., to Rainy River, where it will connect with the road from Winnipeg. Last year the company received a bonus of \$3,000 per mile from the starting point, 18 miles out of Port Arthur on the P. A., D. & W., to Fort Francis. The first 20 miles is built and some work is still going on, but the company has been unable to finance the line. It is expected that 80 miles will be completed this year. (Jan. 20, p. 53.)

ONTARIO ROADS.—The Ontario Government has granted cash subsidies to new railroads in the Province as follows:

Ontario, Hudson's Bay & Western.—Between Missinable Station on the Canadian Pacific Ry. and tidewater on the mouth of Moose River, on James Bay, not exceeding 240 miles, \$2,000 a mile, \$480,000.

James Bay.—From a point at or near Sudbury to a point at or near Lake Abitibi, not exceeding 175 miles, \$2,000 a mile, \$350,000; also land grant on the same terms as the Sault Ste. Marie & Hudson's Bay (below).

Halliburton, Whitney & Mattawa.—Between Halliburton and Whitney, not exceeding 30 miles, \$3,000 a mile, \$90,000.

Ontario & Rainy River.—From its junction with the Port Arthur, Duluth & Western to Fort Francis, not to exceed 205 miles, \$1,000 a mile; and from Fort Francis to the mouth of the Rainy River, not exceeding 75 miles, \$4,000 a mile; total, \$505,000.

Central Ontario.—From Arnsby to Coo Hill to a point at or near Bancroft, not exceeding 21 miles, \$3,000 a mile, \$63,000.

"Central Counties."—From Glen Robertson to Vanleek Hill, not exceeding 14 miles, \$2,000 a mile, \$28,000.

Ontario, Belmont & Northern.—From the northern terminus thereof in the direction of the townships of Belmont and Lake, not exceeding seven miles, \$3,200 a mile, \$22,400.

Sault Ste. Marie & Hudson's Bay.—To have 5,000 acres to each mile of crown lands it passes through, in blocks of 5,000 acres, on each side of the line alternately, by taking the necessary number of lots as the townships are surveyed or outlined, or by taking the proportionate grant for each 10 miles of railway (or 50,000 acres) in block on alternate sides of the line, with a line frontage of 10 miles.

PARRAL & DURANGO.—Jolly Bros. of Pittsburgh, Pa., have the contract, according to report, for grading and track laying of their proposed Mexican line from Parral, State of Chihuahua, to run into the State of Durango, about 50 miles. The Colorado Fuel & Iron Co. has the contract for the rails; Dillworth, Porter & Co. for rail fastenings, and the Shiffer Bridge Co., is to build the bridges, of which there will be eight to ten, with an average span of 40 ft. Samuel E. Gill of Pittsburgh is President. (Feb. 17, p. 132.)

PEARL & LEAF RIVERS.—This road is owned by the J. J. Newman Lumber Co., of Hattiesburg, Miss., and the main line is being extended some four miles under the company's forces. The road is to be ultimately extended to Columbia, Miss., on the Pearl River. (Jan. 6, p. 16.) J. J. Newman, of Hattiesburg, is President. (Official.)

PENNSYLVANIA.—District Commissioner Wright has announced that the company has definitely decided to elevate its tracks in Washington, D. C., and also that a steel bridge is to be erected over the Potomac and the railroad tracks from the south will run over the bridge and on to a viaduct and into a new station on the site of the present one in the mall; thence the tracks will run over a viaduct to the East Branch and down toward Baltimore. These improvements will cost between \$5,000,000 and \$6,000,000.

A number of years ago the Pittsburgh, Virginia & Charleston located and adopted a line from West Brownsville, Pa., south along the river to the West Virginia state line, and the Pennsylvania has recently re-located the same. (Official.) This is the proposed extension already noted in this column. (March 31, p. 236.)

RICHLAND & MAHONING.—Surveys are to be begun soon, according to report, for this proposed line from Mansfield, O., east through Millin, Hayesville, Jeromesville and Reedsburg to Wooster. C. W. French, of Mansfield, O., who is building the Mansfield Short Line, is President of the company. The company was incorporated May 25, 1898. (June 3, 1898, p. 399.)

RICHMOND, PETERSBURG & CAROLINA.—The Colonial Construction Co., of 141 Broadway, New York, has the entire contract on this line from Richmond, Va., south 103 miles via Manchester, De Witt and Petersburg, Va., to Ridgway, N. C. Track was laid last year between Petersburg and De Witt, 20 miles, and grading is partially completed from La Crosse, Va., to Ridgway, 18 miles. The line is to form part of the Seaboard Air Line. (March 10, p. 180.) De Witt Smith, of 141 Broadway, New

York, is President, and R. B. Seymour, of Petersburg, Va., Chief Engineer. (Official.)

SAN FRANCISCO & SAN JOAQUIN VALLEY.—On the extension from Stockton, Cal., west 70 miles via Antioch, Pacheco Landing, Pineola and San Pablo to Point Richmond, the entire distance is under contract with the exception of the section lying between the eighth and eighteenth miles west of Stockton. This section crosses unclaimed marsh land and the work is being done by the railroad company. Wood Bros., of Stockton, Cal., have the first eight miles from Stockton (half completed); Grant Bros., of San Francisco, from the marsh land to Antioch (practically all completed); Charles Erickson, Martinez, Cal., from Antioch to Franklin Tunnel (half completed); Foley Bros. & Muir, of St. Paul, Minn., for Franklin Tunnel, one mile (three-fourths completed); Buckman & Kelso, San Francisco, from Franklin Tunnel to Pineola (one-half completed), and E. B. Stone, Elmhurst, Cal., from Pineola to Point Richmond (one-quarter completed). There is one trestle of 8,000 ft. completed. No other contracts are to be let, and the rails and rolling stock are provided for. (Feb. 24, p. 146.) W. B. Storey, Jr., of San Francisco, is Chief Engineer and General Superintendent. (Official.)

SEATTLE & SAN FRANCISCO.—This company was incorporated in Washington, March 27, with a capital stock of \$3,000,000, to build from a point on Puget Sound, near Seattle, southwest about 30 miles to Palmer, on the Northern Pacific; also with the right of maintaining navigation, telephone and telegraph lines. Seattle is the principal office. John Leary, R. F. Guerin and Pierre T. Ferry are the incorporators. (March 24, p. 217.)

SIERRA OF CALIFORNIA.—Contracts are let, according to report, for 10 miles of extension from Summerville into the timber belt. (March 3, p. 162.)

SOUTHERN.—The extension from Mocksville, N. C., to Mooresville, 27.4 miles, built last year by the N. C. Midland, was opened April 1 to be operated by the company as a part of the Charlotte Division.

Official statement is received that there is no foundation for the report that this company will build from Attala, Ala., to Decatur. (March 3, p. 162.)

It is reported that a syndicate has bought the Big Falls property of the Yadkin River, and that the Southern will build a branch from Albermarle, N. C., to Big Falls, about 12 miles.

SOUTHERN INDIANA.—This company on March 10 filed with the office of the Indiana Secretary of State a notice of its purpose to extend its line from Elmore northwest 46 miles to Terre Haute. (Jan. 20, p. 53.)

SOUTHERN PACIFIC.—The work near Anaheim, Cal., consists of a loop carrying the present line through the town of Anaheim instead of around it, as at present. The total amount of change is between three and four miles. (March 10, p. 180.) There are no structures of importance required, and no heavy work. (Official.)

STONY POINT HARBOR & TERMINAL JUNCTION.—This company has been recently organized in Buffalo, N. Y., with a capital stock of \$1,000,000, to build a railroad from Lake Erie at Stony Point to the Blackwell Canal, and skirting a new canal between the same points. Edward J. Hingston, of the firm of Hingston & Woods, which has the contract bridging and excavating, is President of the new company.

TEXARKANA & SHREVEPORT.—Hunter Bros., of Shreveport, La., have taken the contract for grading the 18 miles of this line from Kiblah into Shreveport. The road was completed as far as Kiblah last year. G. W. Fouke, of Texarkana, Ark., is President. (Dec. 16, 1898, p. 904.)

TEXAS & PACIFIC.—The extension of the Port Allen (La.) branch, under consideration by this company, would not cross the Mississippi River to Baton Rouge, but would be extended a short distance up the west side of the Mississippi. (March 24, p. 217.) The matter of building, however, has not been definitely settled. (Official.)

TRUNK LINE TERMINAL.—A petition has been presented to the Common Council at Detroit by James B. Book, Robert Henkel, Lewis Warfield, Wm. C. McMillan and George Hendrie, stating that they have associated themselves under the above title for the purpose of organizing a railroad company to build an elevated connecting railroad in that city between the east and west side depots, with provision for the connection and transfer to the railroad bridge across the Detroit River.

TUSCARORA VALLEY.—Grading is completed from Blair's Mills, Pa., to Burnt Cabins, 18 miles, on this line from Blair's Mills, southwest 33 miles, via Nossville, Neelyton, Burnt Cabins, Fort Littleton and Knobsville to McConnellsburg. Track laying will be resumed when the weather permits. (Jan. 6, p. 16.) T. S. Moorhead, of Port Royal, is President and General Manager. (Official.)

UNION STATION.—Lewis Stockton, of Buffalo, N. Y., one of the directors, is quoted with reference to this proposed terminal company as follows:

The company is formed for the purpose of obtaining for the city of Buffalo a modern union station in time for the Pan-American Exposition. The company proposes to build a plant to cost \$1,500,000, exclusive of land and elevated structure for tracks. (March 17, p. 198.)

VIRGINIA & SOUTHWESTERN.—Surveys are reported in progress for the extension of the Bristol, Elizabethton & North Carolina line, recently absorbed by this company, from Bristol, Tenn., east along the Watauga River to the iron fields of Johnson County. (R.R. News, March 24, p. 220.)

WESTERLY & JEWETT CITY.—The time has been extended until July 1, 1901 for building this line from Westerly, R. I., northwest 23 miles via Voluntown, Conn., to Jewett City. The road was incorporated in Connecticut June 28, 1893, with a capital stock of \$300,000. Among the incorporators were J. A. Young and James O. Sweet, of Griswold, Conn., and Hugh H. Osgood, of Norwich. (Feb. 24, p. 146.)

WINONA & WESTERN.—A branch, according to report, is to be built this summer from Simpson, Minn., north about eight miles to connect at Rochester with the Chicago & Northwestern.

YORK SPRINGS.—J. Dobbling of York, Pa., has taken a contract, according to report, for building this line from Dillsburg, Pa., on the Cumberland Valley, a line of the Pennsylvania, to run southwest about 12 miles to York Springs, and grading was to be begun this week. G. A. Trimmer of York Springs is among the incorporators.

Electric Railroad Construction.

ALBANY, IND.—C. F. Knowlton, one of the persons interested in the Albany, Dunkirk & Camden Traction Co., is reported as stating that work will be begun the latter part of April on the proposed electric railroad between these places. (Nov. 11, 1898, p. 821.)

ALLENTOWN, PA.—The Allentown & Lehigh Traction Co. is preparing to push the work of rebuilding its lines, and has already received a large quantity of material; 70-lb. rails will replace 45-lb. rails now used between Allentown and Bethlehem. Six cars have already been received and others are yet to be delivered.

ALTON, ILL.—J. F. Porter, President of the Alton Ry. & Illuminating Co. and also interested in the Alton & East Alton Ry. & Power Co., informs us that they expect to have the latter road built and in operation by July. (Feb. 10, p. 109.)

ATLANTA, GA.—The Atlanta Consolidated St. Ry. Co. has a franchise to use the Mitchell St. viaduct, for a proposed extension west from Atlanta. Work must begin within 60 days and finished within 12 months.

BLOOMSBURG, PA.—Wm. McCarroll of Philadelphia, President of the Bloomsburg & Berwick Electric Ry. Co., has franchises for an electric railroad. The company is capitalized at \$250,000, and the line must be begun within four months and completed within a year. (March 10, p. 180.)

BORDENTOWN, N. J.—The Monmouth Traction Co., which now operates about three miles of electric railroad from Bordentown south to Fieldsborough, which is part of the right of way for the proposed road between Camden and Trenton, is soon to begin work to complete the proposed 25 miles of electric railroad which will follow the course of the Delaware River. (March 10, p. 180.)

BROOKLYN, N. Y.—An agreement between the Brooklyn Rapid Transit Co. and the Long Island Railroad Co. was made April 1, by which the B. R. T., through one of its leased lines, will lease and operate the Prospect Park & Coney Island R. R. (a branch road controlled by the Long Island) from Bay Ridge, Borough of Brooklyn, to Coney Island. This road is connected with the Brooklyn Elevated by an inclined structure at 36th St. and Fifth Ave., and during the past two years the Brooklyn Elevated has used the line jointly with the Long Island for through trains from the Brooklyn Bridge to West Brighton. The B. R. T. has also acquired the right to use the tracks of the New York, Brooklyn & Manhattan Beach R. R. (a leased line of the Long Island) between Brooklyn and Manhattan Beach. The Atlantic Ave. line of the Long Island is now being connected with the Brooklyn Elevated by an inclined structure. The three lines will also be equipped with electricity.

The consolidation into one system of the lines referred to here and in previous issues is of much importance, and we hope to go more fully into the matter in a future issue.

The B. R. T. on April 1 gave notice of an additional issue of the capital stock equal to seven per cent. of the capital stock outstanding on April 15, for the purposes of purchasing and electrically equipping the Brooklyn & Brighton Beach R. R. properties and electrically equipping the railroad of the Prospect Park & Coney Island R. R., which by agreement is to be leased for 999 years to a company of the B. R. T. System, and for such additions and improvements to the railroad properties owned or controlled by the B. R. T. as may be deemed desirable.

BUFFALO, N. Y.—The Continental Construction Co. of Buffalo, which has the contract for building the Buffalo, Hamburg & Aurora Electric RR., will begin work about April 10 at three points—at Hamburg, at the city line, and at the junction of the Hamburg and Aurora branches. Contracts have been let for 600 tons of rails to be delivered along the proposed route by June 1. Half of the ties required have already been delivered. (Jan. 20, p. 54.)

BUTTE, MONT.—The Silver Bow Ry., which was originally a cable road operating between Butte and Centerville, Mont., and recently changed to a trolley road (March 24, p. 201), will build a new double track extension of two miles to the Columbia Gardens, recently bought by W. A. Clark and W. L. Hoge, of the company.

Application has been filed with the United States Court by J. R. Wharton, receiver of the Butte Consolidated St. Ry. Co., for permission to lease to the Silver Bow Ry. Co. a part of its line.

CHATTANOOGA, TENN.—The Chattanooga Electric Ry. Co. will build a street crosstown line. The Chattanooga Rapid Transit Co. will, on April 1, assume control of the Chattanooga Belt Ry., under a new lease from the Alabama Great Southern Ry. Material has been secured for changing the Sherman Heights' Belt Line to electricity, an improvement estimated to cost between \$60,000 and \$75,000. Work is also to be begun as soon as possible on the line which is proposed through the military park at Chickamauga. In January a company was incorporated in Georgia to build this road in that state. (Jan. 13, p. 34.)

CHICAGO, ILL.—Work on the Chicago & Milwaukee Electric Ry. is progressing and 500 tons of rails are on the ground for construction work between Highland Park and Evanston, which is already begun. Right of way is secured, except in Kenilworth, where negotiations are progressing. It is said the road will be completed to Evanston by June 20 and that the entire 30 miles from Waukegan to Evanston will be in operation July 1, if present plans are carried out. The company is now running 38 large cars over the 16 miles from Waukegan to Highland Park, which has been operated since last July. It is said that arrangements have been made with the Chicago, Milwaukee & St. Paul for a terminal in Evanston and that convenient transfer facilities will be

furnished for passengers going from the steam to the electric cars. (Jan. 20, p. 54.)

Ironwork for the Northwestern Elevated is in place from Buena Ave. one-half mile south to Willow Ave., although no rails are in place. Foundations for the structural frame work are in over the entire length of the road except one-fourth of a mile between Elm and Schiller Sts. to be completed May 1. All work on the road is being pushed with the expectation of having the road in operation Oct. 1. (Feb. 3, p. 93.)

CLEVELAND, O.—At a meeting of the stockholders of the Lorain & Cleveland Ry., March 28, it was decided to extend the line to South Amherst, a distance of seven miles. New cars will be added.

COLUMBUS, O.—The Columbus & Buckeye Lake Electric Ry. Co. has a franchise. Work is to be begun not later than April 15 and the road must be ready for operation as far as Reynoldsburg by Oct. 1. (March 31, p. 236.)

CREIGHTON, PA.—The Creighton, Tarentum & New Kensington Traction Co., which was granted a charter March 20, is preparing to secure franchises along the Allegheny River from Tarentum to Pittsburgh. John Guffey, M. C. Dwyer, W. F. Johnston, G. D. Prentice and John H. Gailey are among the incorporators. The company is to begin work within one year and have the road completed in 2½ years.

DANBURY, O.—The Marblehead, Port Clinton & Southern RR. Co. was incorporated March 29 with a capital of \$100,000. The incorporators are W. E. Guerin, formerly President of the Columbus, Sandusky & Hocking RR.; Henry Graefe, John W. Mizener, W. C. Bense and William L. Allendorf. The company will build a road from Tiffin, Seneca County, through Sandusky and Ottawa counties to the village of Marblehead on Lake Erie, a distance of about 42 miles. The road may be operated by steam, electricity or other motive power.

DAYTON, O.—J. M. Wilson, Vice-President and General Manager of the company which is building 16 miles of electric railroad between Dayton and Xenia, informs us that the correct name of the company, heretofore spoken of as the Dayton & Xenia Traction Co., is the Dayton, Xenia & Bellbrook Transit Co., the names of the officers and an outline of the plans of which were given in this column Feb. 17, p. 133. Contracts are let and financial backing for completing the road has also been secured, and work is now being pushed to have the road in operation by summer. (Feb. 24, p. 146.)

DOYLESTOWN, PA.—The Doylestown Trust Co., receiver of the Bucks County Ry. Co., has made application to the Court for authority to borrow \$12,000 with which to improve the road and add to its equipment. Geo. P. Block, President. (March 3, p. 164.)

EAST GREENWICH, R. I.—On April 3 a hearing was given by the Corporation Committee of the Senate of Rhode Island for an act to incorporate the East Greenwich Electric Traction Co., to build an electric railroad from Providence to East Greenwich and also to supply electricity for commercial purposes. Louis K. Potter is President and Louis D. Pierce Secretary. John H. Collingwood and Francis D. Blakeslee are also interested.

EAST ST. LOUIS, ILL.—The Collinsville, Caseyville & East St. Louis Electric RR. Co. filed articles of incorporation with the Secretary of State March 23. It proposes to build an electric railroad from East St. Louis through the counties of St. Clair and Madison to Caseyville and Collinsville. The incorporators are: William G. Burrough of Collinsville, W. H. Husckel of Caseyville, D. M. Browning, Thomas L. Fekete and T. J. Daniel of East St. Louis.

ELIZABETH, N. J.—The Elizabeth St. Ry. horse road of 3½ miles, which is considering plans for changing to electricity, offers, if permission is granted for the change, to extend the line to Union Township. Senator John Kean is interested.

Senator Kean, in application to the City Council of Elizabeth for a trolley franchise from the Staten Island ferry to Roselle Township line, a distance of about 10 miles, offers a five cent fare to Cranford, and to pave many of the streets through which the road passes.

ERIE, PA.—The Erie Electric Motor Co., we are officially informed, will build a four-mile double-track extension to a summer resort, the work to be done by the company's own forces.

FLINT, MICH.—We are officially informed that surveys have been completed by the promoters of the Michigan St. Ry. Co. for the Long Lake Division of that road. This includes the road within the city of Flint from Flint to Fenton, and within the village of Fenton. It is the intention of the company to rush work on this division to an early completion, if possible, in time to accommodate summer traffic to Long Lake, and work on the other divisions will be begun immediately thereafter. The Michigan Heat, Light & Power Co. will be incorporated simultaneously with the Michigan St. Ry. Co. (March 17, p. 198.) A. A. Talmage is President.

FLORENCE, COL.—Thomas Robinson of the United Oil Co., Florence, informs us that he has accepted the franchise recently granted for an electric railroad of 20 miles between Florence and Canon City. (Feb. 24, p. 147.) R. L. Kelly is Engineer.

FOSTER, R. I.—The Providence & Danielson Ry. Co., which was incorporated in January as successor to the Cowsett Terminal & Transportation Co., incorporated in 1893, is endeavoring to secure right of way for the proposed electric railroad, from Foster to Danielson.

GEORGETOWN, MASS.—The Georgetown, Rowley & Ipswich St. Ry. has been granted a franchise in Newburyport for an extension through that place. The road must be in operation by Sept. 1. (March 31, p. 236.)

GRAND RAPIDS, MICH.—Nearly all the right of way has been secured for the Grand Rapids & Belding Traction Company's proposed line between Belding and Grand Rapids. Work is to be begun in time to have the road completed and in operation by Oct. 1. Chas. B. Judd, President, Grand Rapids.

HANNIBAL, MO.—The bonds of the Suburban Electric Ry. are gradually being disposed of. The company, which is to be capitalized at \$250,000, has not yet been incorporated. Under the present or-

ganization D. Thomson is President, and George Leis is Treasurer. It is proposed to build 20 miles of electric railroad between Hannibal, Palmyra, Oakwood and Mark Twain Cane (called Cane City). Twelve combination motor cars and six trailer cars will constitute the equipment of the road, but bids are not desired until all the bonds of the company are floated. (Jan. 14, 1898, p. 35.)

KANSAS CITY, MO.—Beside changing the present line of the East Side Electric RR. to overhead electric system, six miles of additional road will be built and contracts will probably be let about April 10. It is said the company is in the market for some double truck cars and power house equipment. W. O. Hands is General Manager. (Dec. 30, 1898, p. 939.)

LANSDOWNE, PA.—Bids will soon be asked, according to report, by Henry W. Brennen, Philadelphia, President of the Arcadia Park Ry. Co., for the proposed three miles of electric railroad. (Arcadia, March 10, p. 180.)

LINWOOD, MASS.—The Linwood St. Ry. Co. has a franchise for the electric railroad between Linwood and Whitinsville and the road will probably be finished and in operation during the coming summer. Connections will be made at Whitinsville with the Worcester & Blackstone Valley RR., making a through line of 18 miles to Worcester.

LONG ISLAND CITY, L. I.—President Wm. H. Baldwin, Jr., of the Long Island RR., in a circular in which he recommends the execution of a \$45,000,000 mortgage, proposes \$1,250,000 for equipping the Atlantic Avenue division for electrical operation; also \$8,500,000 to be reserved to pay the cost of change of motive power in case of a change to electricity or other motor power, should it be deemed advisable.

MILWAUKEE, WIS.—A special meeting of the Belle City Electric Ry., which will be operated by the Milwaukee Electric Ry., was held March 29. All the old directors resigned and the following new directors were elected: John I. Beggs, T. E. Mitten, Matthew Slush, A. W. Bishop, T. O. Wheatcraft and G. N. Pratt. The directors elected the following officers: President, Matthew Slush, Mt. Clemens, Mich.; Vice-President, A. W. Bishop, Racine; Manager, John I. Beggs; Treasurer, T. O. Wheatcraft; Secretary, H. C. MacKay; Local Manager, T. E. Mitten, all of Milwaukee. It was decided to expend from \$50,000 to \$75,000 on improvements on the road this year, which includes new rails, new motors on old cars, overhead wire system rebuilt and additions to the power house; also, probably, an extension of two miles to Lakeside. (See Electric Railroad News column.)

MINNEAPOLIS, MINN.—According to report, the Twin City Rapid Transit Co., which was recently granted a franchise for an extension from St. Paul to Stillwater, a distance of 12 miles, will extend the road from Stillwater, five miles, to Hudson, crossing the boundary line into Wisconsin. (Jan. 27, p. 74.)

MT. VERNON, N. Y.—The New York, West Chester & Connecticut Traction Co. has been granted a 99-year franchise for the electric railroad from the boundary line of Mt. Vernon, at the Hutchinson River to Pelham Manor railroad station. (March 31, p. 231.)

NEVADA, MO.—J. B. Quigley has organized the Missouri Water, Light & Traction Co., with a proposed capital stock of \$100,000, the primary object of which is to build an electric railroad connecting the Union Depot, the State Insane Asylum and White Sulphur Springs Lake and Park. The company will also do a gas lighting and electric lighting business. S. A. Wight, C. M. Scharfel and H. M. Buck are also interested. (Oct. 7, 1898, p. 733.)

NIAGARA FALLS, ONT.—The Niagara Falls Park & River Electric Ry., which runs from Chippewa, Ont., along the Canadian side of the Niagara River, is about to spend \$265,000 on improvements, which will include an extension from Fort Erie, opposite Buffalo, N. Y., to Point Albino, a distance of about 13 miles; and also an extension from Fort Erie north about 25 miles to Chippewa, which is the present southern terminus of the road. A branch line will also be built from Fort Erie to the Erie race track, and to the grove at Erie Beach, a summer resort. It is proposed to have the extension from Fort Erie to Point Albino in operation by July 1. W. Phillips of Niagara Falls, Ont., is Manager. (March 17, p. 199.)

NORFOLK, VA.—The Norfolk & Atlantic Terminal Ry., which is building an electric railroad from Norfolk to Sewell's Point, on Chesapeake Bay opposite Old Point Comfort, has given a mortgage to the Maryland Trust Co. for \$500,000 30-year 5 per cent. bonds, to secure funds for building the proposed 18 miles of road. The company will also build a hotel and a pier. Daniel Lowenberg of Norfolk is President. (March 17, p. 199.)

OAKLAND, CAL.—At the annual meeting of the Oakland Transit Co., March 25, E. A. Heron was elected President; W. H. Martin, Vice-President, and Samuel Taylor, Secretary. The directors voted to extend the West Oakland line to connect with the East Oakland line.

OGDEN, UTAH.—General Manager Weaver of the Ogden St. Ry., W. G. Wilson and Wm. Adamson, receiver of the Ogden Water Works are considering the advisability of an electric railroad in Ogden Canon.

OWEN SOUND, ONT.—The Owen Sound & Georgiana Bay St. Ry. Co. has made application for the incorporation of a company, to be capitalized at \$95,000, to build an electric railroad from Owen Sound to a point on Georgiana Bay. Among the first board of directors are Christopher Eaton, Philip Eaton, Wm. Taylor, James McLaughlin and John Henry McLaughlin.

PARIS, TENN.—The Paris Electric St. Car Co., with a proposed capital stock of \$100,000, has been organized by O. C. Barton, W. C. Johnson, W. A. Carter, F. M. Vancleave, C. P. Hudson, J. C. Porter, J. M. Porter, J. R. Rison, J. C. Sweeney, W. W. Fara- baugh and H. B. Swinney. Articles of incorporation have been filed and application for a charter made.

PEORIA, ILL.—The Schultze Bridge & Iron Co., of Pittsburgh, Pa., has the contract for bridge work necessary for the Peoria & Pekin Traction Company's lines. Gustavus Kaufman, of Pittsburgh, is Bridge Engineer of the P. & P. T. Co. Many contracts are already let for material for the road.

Louis E. Meyers of Peoria is General Manager. (March 17, p. 199.)

PERKASIE, PA.—Warren Cressman, Engineer of the Inland Trolley Ry. Co., is surveying the proposed line from Perkasia, 12 miles to Lansdale. The line has already been located from Perkasia to Telford.

PITTSBURGH, PA.—The Monongahela St. Ry. Co. has had plans prepared for the new branch road to East Pittsburgh, for which it has incorporated the East Pittsburgh & Wilkesburg St. Ry. (March 10, p. 81.)

PORTSMOUTH, N. H.—We are officially informed that the Portsmouth Electric RR. is building the Portsmouth & Dover RR., formerly a branch of the Boston & Maine, operated by steam and now leased to the P. E., as an electric extension in the city of Portsmouth and to Rye Post-Office. In all, the road will be about nine miles long. The road will probably be open for traffic in July, when it will be operated as a part of the Boston & Maine and will not have a separate operating force. (March 24, p. 219.)

ROME, N. Y.—At a special meeting of the stockholders of the Rome City St. Ry. Co., April 1, the capital stock of the company was increased from \$50,000 to \$150,000. The company is planning to change the road to be operated by compressed air. John S. Wardwell, President. (March 17, p. 199.)

SAN DIEGO, CAL.—An ordinance has been passed granting the San Diego, Old Town & Pacific Beach RR. Co., a steam motor road of about 10 miles, consolidated with the San Diego, Pacific Beach & La Jolla Ry., the right to use electricity as a motive power in that city. We have official information to the effect that the San Diego, Pacific Beach & La Jolla is considering plans for changing that road and its branches to electric power.

SAN JUAN, PORTO RICO.—The San Juan & Ponce RR. Co. was given a hearing before the Committee on Corporations of the Senate of Rhode Island March 29, on an act for incorporation. The company proposes to build and operate railroads and ferries, using both steam and electricity, building and operating electric power plants, and doing a general freight and passenger business in the Island of Porto Rico. It is also proposed to run a steamship line between Providence, R. I., and ports in the West Indies.

SARATOGA, N. Y.—We are officially informed that work will be begun not later than June 1 on the 25 miles of electric railroad to be built by the Saratoga Northern Ry., between Saratoga and Glens Falls, N. Y. Rails have been bought and bids for the rolling stock will be asked by Sept. 1. Two open and four closed motor cars, two open and four closed trailer cars, and two open and two closed grip cars are being considered. The company now operates the Saratoga & Mt. McGregor RR., and is capitalized at \$1,000,000. The officers are: President, F. L. Pitcher; Vice-President, J. L. Mott; Secretary and Purchasing Agent, H. H. Schaff; Treasurer, F. C. Parker; Superintendent, R. E. Dunstan. At first power will be leased for the operation of the road, but later on a power house will be built.

SCRANTON, PA.—The Scranton Ry. Co. has been granted a franchise to extend its tracks on Wyoming Ave., from Green Ridge St. to the County Club House. It will be necessary to build a bridge on Wyoming Ave. Frank Stillman, Jr., General Manager.

SEATTLE, WASH.—We are officially informed that A. F. Haas has been appointed Superintendent in charge of the electric railroad which Andrew F. Burleigh and associates propose to build on Yesler Way.

TACOMA, WASH.—The Tacoma Ry. & Power Co., which is the consolidated company of the various street railroads in Tacoma, has an application before the County Commissioners for an electric extension from Tacoma 14 miles to American Lake. The terms provide that the line must be built and in operation within one year, and at least one passenger train shall be run in each direction the entire length every day. (Feb. 10, p. 112.)

TAUNTON, MASS.—The East Taunton St. Ry. Co. has a franchise through Middleboro for a continuation of its line from Taunton, four miles to East Taunton, where it is proposed to connect with the New Bedford & Middleboro line. M. A. Cavanaugh, President and Purchasing Agent.

TIFFIN, O.—The Tiffin, Fostoria & Eastern Electric Ry. will, according to report, be extended 15 miles northeast from Republic to Bellevue, and from there seven miles east to Norwalk, O. A. Kaup, Manager.

TORONTO, ONT.—The Metropolitan Ry. Co., Chas. D. Warren, President, has in consideration an extension, 38 miles north to Newmarket; also an extension northwest to Schomberg, a distance of 15 miles from Bond Lake. After these are completed, a line 18 miles north from Newmarket to Roach's Point is proposed, and one from Schomberg, nine miles to Tottenham. (March 17, p. 199.)

WILMINGTON, DEL.—A new company, to be known as the New Castle & Delaware City Co., by Peter L. Cooper, Jr., Wilmington; Henry A. Richardson, Dover, and C. P. King, Philadelphia, has filed articles of incorporation to build an electric railroad from New Castle to Delaware City. The capital stock is to be \$100,000.

YORK, PA.—The Common Council has passed the ordinance granting the York St. Ry. Co. right to extend its lines along West College Ave., from South George St. to South Penn St., and on that street to West Princess St.; thence on that street to East College Ave. easterly to the city limits. (Feb. 3, p. 94.)

GENERAL RAILROAD NEWS.

CAROLINA MIDLAND.—Application for a receiver for the Southern Investment Co., controlling the Carolina Midland has been filed in the South Carolina State Court at Aiken. The line is from Allendale, S. C., to Sievern, 22 miles. The company went into the hands of the receiver on Feb. 1, 1897, but was soon restored to the officers of the company.

CENTRAL VERMONT.—The United States Circuit Court at Brattleboro, Vt., has confirmed the sale of

this property, made March 21, to the reorganization committee. (March 24, p. 219.)

CHICAGO & SOUTHEASTERN.—Judge Scanlan at Anderson, Ind., on April 4 filed the first suit against this company under the new State law which annuls the grant to railroads and transportation companies which make no effort to pay judgments and claims within a year. A receiver is also asked for. (Nov. 13, 1898, p. 839.)

CHICAGO, BURLINGTON & NORTHERN.—Formal call is made for payment of the \$8,053,500 first mortgage 5 per cent. bonds, due April 1, 1926, at the Merchants' National Bank, Boston, at 105 and accrued interest, on Oct. 1. Calls have already been issued for the second mortgage 6 per cent. bonds due 1918. (Nov. 18, 1898, p. 839.)

COLUMBUS, HOCKING VALLEY & TOLEDO.—The report of Special Master Commissioner B. R. Cowen in a case of the Central Trust Co., which was filed in the United States Circuit Court at Columbus, O., March 31, says that the proceeds of the recent foreclosure sale are to be applied as follows:

Interest on consolidated first mortgage bonds, \$625,400; interest on first mortgage bonds, \$388,188, leaving \$2,965,413 for pro rata payment on 8,000 bonds of \$1,000 each of \$372.17 on the principal of each. The special masters were instructed to cancel the coupons on the bonds, dated Oct. 1, 1881, which have been turned in by the holders, including interest of March 1, and stamp the bonds reduced by the pro rata payment. The special masters find that this leaves \$626.83 due on each of the bonds. There also remain due 2,000 mortgage bonds of the Columbus, Hocking Valley & Toledo Ry. Co. and the Hocking Coal & Ry. Co., secured by mortgage to John H. Devereaux, amounting to \$2,220,917.60.

GALVESTON, HOUSTON & NORTHERN.—This company was incorporated in Texas, March 31, with a capital stock of \$500,000 as successor to the Galveston, Laporte & Houston (which see). The incorporators are: Charles S. Broadhead, Delacy Chandler, John H. Atkinson, W. B. Munson and J. T. Munson. The principal office is at Houston, Tex.

GALVESTON, LA PORTE & HOUSTON.—L. J. Smith, who bought this road at foreclosure on Oct. 4 last for \$425,000, has made the final payment on the road. (Dec. 23, 1898, p. 925.)

JACKSONVILLE, TAMPA & KEY WEST.—The main line was sold at Deland, Fla., April 3, to the Plant Investment Co., for \$600,000. The Plant system is to begin operating the road May 1. (Feb. 21, p. 147.)

KANSAS CITY, PITTSBURGH & GULF.—On application of Chas. Grannis and other stockholders and creditors, Judge Gibson, of the Circuit Court at Kansas City, Mo., on April 1 appointed the following receivers for this road: E. L. Martin, Vice-President; Robert Gillham, General Manager, and J. McDee Trimball, Attorney, of Kansas City. The receivership applies only to the parent system.

E. H. Harriman, George Coppel and W. E. Glynn have been added to the Reorganization Committee. The Mercantile Trust Co. will advance to depositing bondholders, for account of the Reorganization Committee, the face of the coupon due April 1.

LONG ISLAND.—A special meeting of the stockholders will be held at the company's office, at Jamaica, L. I., April 11, at 11:05 a. m., to vote upon a proposition to unify the mortgages by an issue of \$45,000,000 50-year gold bonds, at a rate not to exceed 4 per cent. per annum. Of this issue \$28,000,000 is to be reserved for retiring existing bond indebtedness; \$1,000,000 for improvements and additions recently made to the property; \$1,250,000 for the improvements and the acquisition of additional property, now pending before the Legislature, and an equal amount for equipping the same for electrical operation; \$1,000,000 for the abolition of grade crossings; \$8,500,000 for changes of motive power to electric or otherwise, should it be deemed advisable, and \$4,000,000 to be held in reserve and issued at the rate of not exceeding \$400,000 per annum for the abolition of grade crossings, for permanent betterment and the acquisition of additional property. The directors have arranged to sell on favorable terms sufficient bonds to pay the floating indebtedness and all the real estate mortgages and equipment notes, and to exchange upon a favorable basis over \$2,000,000 bonds for securities of various issues now outstanding, which will result in an annual saving in interest of about \$24,000. (Feb. 17, p. 134.) See Electric Railroad Construction column under Brooklyn, N. Y.

MEXICAN NATIONAL.—The Secretary gives notice that holders of second mortgage A bonds are entitled to a payment of 3½ per cent. on account of past due interest from the earnings of 1898, payable at the National Bank, New York, on and after April 20. These bonds aggregate \$12,265,000. A similar payment was made in April, 1898, but only 3 per cent. was paid in 1897, and 1½ per cent. in 1896.

NORFOLK & WESTERN.—Kuhn, Loeb & Co. have bought \$5,000,000 N. & W. first consolidated mortgage 4 per cent. gold bonds. Of this, \$1,500,000 is to be used for betterments, double tracking and additional rolling stock, and the remainder to take up the underlying bonds maturing July 1, 1900.

PEORIA, DECATUR & EVANSVILLE.—The first mortgage bondholders committee, of which Wals-ton H. Brown is chairman, notifies holders of Central Trust Company's certificates of deposit for first mortgage bonds on both divisions, that the Central Trust Company will advance six months' interest on the same at 5 per cent. after April 1. (March 17, p. 200.)

RICHMOND, NICHOLASVILLE, IRVINE & BEAT-YVILLE.—Judge Walter Evans, of the United States Circuit Court at Louisville, Ky., has ordered a new sale of this road on May 1 at Versailles, Ky., between 10 a. m. and 2 p. m. The road was sold in 1897 to Adolph Segal, of Philadelphia, who failed to make the required payments. Another sale took place Oct. 6, last, to Col. Bennett Young, but the sale was set aside by the courts. (Feb. 17, p. 134.)

ST. LOUIS & OKLAHOMA.—The formal transfer of this road to the St. Louis & San Francisco was made March 31 at 10 a. m. (Feb. 24, p. 148.)

ST. LOUIS, INDIANAPOLIS & EASTERN.—A press despatch states that the formal transfer of this

property, which extends from Switz City, Ind., to Effingham, Ill., 90 miles, was made to the Illinois Central on March 25. (Jan. 20, p. 55.)

SOUTH CAROLINA & GEORGIA.—The stockholders meet April 11 to consult on the advisability of guaranteeing \$1,800,000 4½ per cent. gold bonds to be issued by the South & North Carolina extension and also \$100,000 first mortgage 5 per cent. gold bonds of the Sumpter & Wateree, both proposed extensions of this company.

WINNIPEG & HUDSON BAY.—During the year 1896, according to the Government returns, the Province of Manitoba paid \$12,821.72 to the holders for interest on bonds of the Province issued in 1886 in aid of the Winnipeg & Hudson Bay Ry. & Steamship Co., which makes the indebtedness of this company to the Province \$255,986.66 for the principal, and \$153,781.26 for interest, or a total, exclusive of compound interest, of \$409,767.92. Nothing has been paid by this company on account of principal or interest since these bonds were issued. An arrangement has now been entered into between the Government of Manitoba and the Winnipeg & Great Northern whereby the Province has received from the said company 256,000 acres of the land grant within the Province in full settlement of the claims of the Province in respect of the said bonds and interest in aid of the Winnipeg & Hudson Bay Ry. & Steamship Co.

Electric Railroad News.

AKRON, O.—The Akron St. Ry. & Illuminating Co. was sold by Master Commissioner Henry R. Young for \$1,050,000 to James H. Dempsey of Cleveland, O., representing the Reorganization Committee of New York. The appraised value of the property was \$695,000. The Akron Traction Co. was recently organized, with a capital stock of \$100,000, which will be increased to \$2,000,000, to take over the property of the A. St. Ry. & I. Co., under the plan of reorganization, which was prepared by Samuel Thomas and F. A. Sieberling, and made known in December, and provides that the new company shall create the following securities:

Twenty-five-year 5 per cent. gold bonds of \$1,000 each, to be a lien upon all the new company's railroads, electric light plant and all other property rights and franchises; total authorized issue, \$1,200,000. Of which as part consideration for the \$1,000,000 5 per cent. of 1896 \$500,000. Authorized to be sold at not less than 85 per cent. of their par value to retire the receiver's certificates, and the \$185,000 Akron Street R. R. 1st 6s of 1888 (if retired), and to pay the floating debt, reorganization expenses, etc., \$400,000. Reserved "for the extension of railroad and purchase of new property, but only with the approval of the holders of at least two-thirds of the preferred stock of the new company." \$300,000. Five per cent. non-cumulative preferred stock in \$100 shares, \$1,000,000. Common stock in \$100 shares, \$1,000,000. (March 24, p. 220.)

BOSTON, MASS.—E. Rollins, Moss & Bros. and Tucker, Anthony & Co., brokers, of Boston, have bought all the assets of the North Shore Traction Co., which controls by ownership of stock about 163 miles of electric railroads. The purchase includes the stock of the Lynn & Boston and the Beverly & Danvers St. Ry. Co., which is 3½ miles long. The price paid was \$258,800. The North Shore Traction was incorporated in 1892 under the laws of New Jersey, for the purpose of controlling various street railroad properties through ownership of stock. It is not an operating company. Through the ownership of the Lynn & Boston it had control of the Boston & Chelsea RR., 4½ miles; Boston & Revere Electric St. Ry., 4 miles; East Middlesex St. Ry., 18½ miles; Winnisimmet (St.) RR., 2½ miles. Each of these companies is leased to the L. & B. for 99 years. The capital stock of the L. & N. amounts to \$1,266,000 and in September last a dividend of 4 per cent. was paid. The capital stock of the North Shore Traction amounts to \$6,000,000, of which \$4,000,000 is common and \$2,000,000 preferred stock. A 3 per cent. dividend was paid in October, 1898. (Jan. 27, p. 76.) A meeting will be held April 28 to authorize the abolition of the North Shore Traction Co.

BUFFALO, N. Y.—At the annual election of the Buffalo & Niagara Falls Electric Ry., March 30, the following officers were elected: President, W. Caryl Ely; Vice-President, Daniel S. Lamont; General Manager, Burt Van Horn; Secretary and Treasurer, Richard F. Rankine; Superintendent, C. K. Marshall. The election of the Buffalo & Lockport Ry. was held later, and the officers were elected as follows: President, W. Caryl Ely; Vice-President, Henry J. Pierce; General Manager, Burt Van Horn; Secretary and Treasurer, Richard F. Rankine; Superintendent, C. K. Marshall.

EASTON, PA.—On March 25 the annual meeting of the seven electric railroad companies which propose to build from Easton, was held in that city. Officers were elected for the various companies as follows: Easton, Palmer & Bethlehem St. Ry. Co., which has been in operation since the early part of November—President, M. P. McGrath, succeeding Chas. A. Richardson, resigned; Treasurer, W. L. Kendall; Secretary, Robert H. Rudolph. The Easton & South Easton St. Ry. Co.—President, Charles A. Richardson; Treasurer, W. L. Kendall; Secretary, Robert H. Rudolph. The Slate belt Electric St. Ry. Co.—President Thomas A. H. Hay; Treasurer, T. A. H. Hay; Secretary, Thomas R. Martin. This company, one of the most recent of those incorporated, has already been granted franchises which are sufficient to begin building the road. The Northampton Central St. Ry. Co.—President, Charles A. Richardson; Treasurer, M. P. McGrath; Secretary, Thomas R. Martin. The Northampton Southern St. Ry. Co.—President, C. H. Cox; Treasurer, Thomas A. H. Hay; Secretary, Thomas R. Martin. The Bethlehem & Freemansburg St. Ry. Co.—President, M. P. McGrath; Treasurer, Thomas A. H. Hay; Secretary, Thomas R. Martin. The Easton & Nazareth St. Ry. Co.—President, William O. Hay; Treasurer, Thomas A. H. Hay; Secretary, Thomas R. Martin. The directors are the same for each company, which, it is proposed to eventually consolidate into one system.

JERSEY CITY, N. J.—The North Hudson County Ry. Co., and the Orange & Passaic Valley Ry. are, according to report, to be leased to the North Jersey St. Ry. Co. When this is done about 160 miles of street railroad, with an aggregate capitalization

of \$70,000,000, will be under the control of one company.

MILWAUKEE, WIS.—General Manager John I. Beggs, of the Milwaukee Electric Ry. & Light Co. (Mar. 31, p. 238), has issued the following announcement:

The owners of the Milwaukee, Racine & Kenosha Electric Ry. have purchased about 90 per cent. of the stock of the Belle City Electric Ry. and about 80 per cent. of the entire issue of bonds of that company. In pursuance of our agreement with the owners of the Milwaukee, Racine & Kenosha property, we will commence to operate, in connection with the M., R. & K. line, the Belle City lines, together with the company's lighting plant, on April 1. Considerable money is to be spent on the Belle City road by the new owners in order to put it in the best condition. One of the agreements we have with the owners is that they will cancel their coupons of the \$250,000 bonds for at least two years to come, and pay assessments on the \$200,000 stock of from \$20 to \$25 per share, in order to provide the \$75,000 needed to put the property in shape. (See Electric Railroad Construction column.)

MUSCATINE, IA.—The Muscatine Electric Ry., according to report, which owns the street railroads, electric lighting and gas plants of Muscatine, has been sold to Harry W. Huttig, General Manager of the Huttig Bros. Manufacturing Co. (April 8, 1898, p. 268.)

NEWBURYPORT, MASS.—The Newburyport & Amesbury Horse RR. Co., an 18-mile railroad, now operated by electricity, connecting Newburyport with Newbury, Amesbury and Merrimac, was sold at public auction March 28 for \$190,000 to the Hon. Edward P. Shaw. The road was sold at the order of the United States Circuit Court in the interest of the bondholders who have operated it since last fall, Edward P. Clark of Peabody having been receiver. (Oct. 7, 1898, p. 734.)

NEW YORK, N. Y.—On April 4 announcement was made of a traffic agreement between the Manhattan (elevated) Ry. Co., and the Third Ave. RR. Co., to be effective May 1 on all the lines of both the elevated and street railroads controlled by these two companies. The plan contemplates a transfer system for 3 cts. extra from one road to the lines of the other.

NILES, O.—The Mineral Ridge & Niles Electric St. Ry., owned by Daniel Moynahan, of Niles, has been sold to A. A. Anderson, Treasurer and Manager of the Mahoning Valley Electric Ry. Co., at Youngstown, O. The property was transferred April 1.

OAKLAND, CAL.—At the annual meeting of the Oakland Transit Co., March 23, resolutions were adopted for an assessment of \$1 per share upon the capital stock of the corporation, to be paid by April 24. Samuel J. Taylor, Secretary. Many improvements are being made.

ST. LOUIS, MO.—The final negotiations for completing the sale of the People's Ry. Co. to Brown Bros. & Co., New York, for \$1,125,000 were completed March 31, and the road will now be included in the system being organized by Brown Bros., who have purchased the Lindell, Midland, Central Traction and other street railroad companies.

SIOUX CITY, IA.—The street railroad properties of the Sioux City Traction Co., the Sioux City Transit Co., and the Sioux City & Leeds Electric Ry. Co., have been consolidated and now comprise a system of about 35 miles of street railroad. A new company is to be formed, with a capital stock of \$750,000, for the consolidation. The Sioux City Transit Co. recently secured control of the Sioux City Elevated. (Feb. 3, p. 96.)

SOUTH BEND, IND.—The Indiana Electric Co., organized March 28, embraces in its management the old Indiana Electric Ry. Co., which owns the South Bend St. Ry. and the General Power & Quick Transit, and operates the line from South Bend to Mishawaka, Ind., and the South Bend & Elkhart St. Ry. and owns the extensions now building. The new company is to have a capital stock of \$1,000,000. When the lines now building are completed, a system of forty-five miles of electric railroad will be owned by the company. Arthur Kennedy and Francis J. T. Torrance are the principal owners. (Feb. 10, p. 110.)

WASHINGTON, D. C.—The total capitalization of consolidation of the various street railroads in Washington, now taking place, and to be known as the Washington City R. R. Co., involving seven companies, amounts to \$10,434,800, divided as follows:

	Bonds.	Stocks.
City & Suburban	\$1,750,000	\$1,750,000
Metropolitan	2,350,000	1,000,000
Columbia	1,000,000	400,000
Washington & Great Falls	400,000	86,800
Brightwood	500,000	108,000
Georgetown & Tenleytown	100,000	200,000
Anacostia & Potomac River	400,000	100,000
Capital Traction	190,000	100,000
	\$6,690,000	\$3,744,800

The mileage of these various companies is as follows: Belt, 13.02 miles; Brightwood, 11.10 miles; Anacostia, 11.07 miles; Georgetown & Tenleytown, 8.60 miles; Capital, 1.32 miles; Metropolitan, 24.12 miles; City & Suburban, 20.39 miles; Columbia, 6 miles; Washington & Great Falls, 7 miles. Total, 102.62 miles. The single trackage of the Capital Traction road within the District is 32 miles.

The Baltimore Trust & Guarantee Co., and the United States Mortgage & Trust Co., of New York, are conducting the negotiations for the consolidation. Beside the street railroads, the consolidation will embrace the Potomac Light & Power Co., and the United States Electric Light Co.

TRAFFIC.

Traffic Notes.

A press despatch from Buffalo states that the 21 grain elevators in that city which have railroad connections have agreed to form an association and that during the coming season they will make a uniform charge of five mills a bushel for handling grain.

President C. P. Huntington, of the Southern Pacific, told a reporter at New Orleans that the traffic between interior Texas points and vessels on the Gulf of Mexico will be transferred at Galveston, as far as possible. This appears to indicate that some freight heretofore carried to New Orleans will be sent to Galveston instead.

The United States Circuit Court has issued an injunction stopping the issue of transferable mileage tickets at two cents a mile by the Rutland Railroad, which tickets were ordered to be issued by the last Vermont Legislature. The opinion, by Judge Wheeler, holds that the charter of the railroad was a contract between the State and the company and that, as there is prima facie evidence that the reduction of fares which would be effected by the sale of the mileage tickets would reduce the income of the stockholders of the road to less than 2 per cent., the law virtually results in taking private property without due process of law.

Chicago Traffic Matters.

Chicago, April 5, 1899.

Chicago railroad officers are just now more interested in the Great Northern road's cut in first-class sleeping car rates from St. Paul and Minneapolis to the Pacific coast than in any other question, the rate situation not excepted. This line has given notice of a cut of \$3 in the first-class berth rates between the twin cities and the coast, which of course means a corresponding reduction from Chicago. The Great Northern runs its own sleepers. The contracts of the Pullman company with the roads over which its cars are run specifies that its rates must be no higher than those charged over other lines. This clause will force Pullman to meet the cut of the Great Northern Railroad officers, particularly the passenger men, those who come in contact with the public, are pretty well united in the opinion that sleeping car rates need readjustment, to put it mildly. The majority opinion is that a difference in the price of upper and lower berth charges, as advocated by General Passenger Agent Ford, of the Pennsylvania, some time ago, would be more satisfactory than a general reduction in the price of both upper and lower. A minority, however, believe that both berths ought to be sold for less money. Recently President Hill, of the Great Northern, has assumed an aggressive attitude. First he slashed the colonists' rates and now he has tackled the sleeping-car charges. The Baltimore & Ohio has decided to take off the "Ordinary" sleepers lately put in service between Chicago and the East on the ground that Pullman was not in a position to furnish other roads with similar service.

The colonist rate muddle gets in a worse mess each day. At a meeting of the direct routes to the coast—that is, the lines via Omaha and Kansas City—it was decided to meet the rates of the Great Northern Pacific by putting in a \$25 rate from Omaha and \$28 from Kansas City to Montana points on the rebate plan. But now comes General Passenger Agent Lomax, of the Union Pacific, and says he will not join in any such agreement. And here the question hangs, with another meeting to come. The two northern roads have had their present low colonist rates inserted in the trunk lines' European rate sheets, which means that so far as Europe is concerned these rates will continue in effect until September 1, as, according to agreement, the European rate sheets are subject to but two changes a year.

The Santa Fe has extended the time for abrogating its feeding in transit rates to May 20. There is considerable opposition from the Western shippers to the abolition of these rates.

Chicago Board of Trade men and local shippers generally are making a strong fight at Springfield over the proposed bill that the railroads have had introduced in the Legislature making the charge of \$1 for every twenty-four hours a car is detained unloaded after two days on a side track a lien on the property in the car.

The Chicago & Alton announces improved train service between this city and Joliet, thirty-eight miles. The new time table calls for four new trains between the two points.

The Pacific Coast Limited, which runs over the Alton, the Missouri Pacific, the Texas & Pacific and the Southern Pacific, will hereafter be run out of Chicago but once a week, instead of twice, as heretofore.

The movement of legitimate homeseekers to the northwest is heavier this season than for several years. The business is from the Virginias, western Pennsylvania, Ohio, Indiana, Michigan and Illinois. The popular objective points are the Dakotas and Montana.

The Michigan Central gives official notice that on April 8 it will tender all roads west of Chicago basing rates as low as any in effect by any eastbound line from Chicago; which means that this road's rates for basing purposes will be lowered to the basis of those over differential roads.

Eastbound shipments of flour, grain and provisions from Chicago and Chicago junctions to and beyond the western terminus of the trunk lines for the three weeks ending April 1 amounted to 373,793 tons, as compared with 476,295 tons for the corresponding period of last year. This statement includes 71,647 tons of flour, 255,845 tons of grain and 46,303 tons of provisions. The following table shows the quantities and proportions carried by the respective roads:

Baltimore & Ohio	35,581	9.7
Cleveland, Cin., Chi. & St. Louis	15,235	4.8
Chicago & Erie	23,474	7.9
Grand Trunk	42,020	11.8
Lake Shore & Michigan Southern	49,009	13.6
Michigan Central	37,473	10.3
New York, Chicago & St. Louis	50,478	13.8
Pitts., Cin., Chi. & St. Louis	30,867	8.3
Pittsburg, Ft. Wayne & Chicago	51,722	14.9
Wabash	17,834	4.9
Totals	373,793	100.0

Eastbound shipments from Chicago as reported weekly by the Board of Trade were, for the three weeks ending April 1, 326,312 tons, as compared with 467,262 tons for the corresponding period of last year. This total of 326,312 tons, is made up of 49,084 tons of flour and mill stuffs, 178,820 tons of grain, 38,641 tons of provisions, 27,152 tons of dressed beef and 32,615 tons of miscellaneous freight.

The statements of freight shipped eastward from Chicago are made up on two bases. The first statement given above is that furnished by the Chicago Freight Committee. It covers only three principal classes of freight, and it includes only such shipments as are carried through to Buffalo, Pittsburg, Wheeling, etc.; but it includes shipments from all junction points in Cook county, and from some other points, including all from the Elgin, Joliet & Eastern. The second statement does not include shipments from the junctions outside the city, but it does include, practically, all kinds of freight except live stock, and it shows the total shipments by the roads mentioned to all points, both through and local.